

Instrumentation & Control Panel Submittal

**HSI1102-0-0-1
Blower Panel**

P.O. # 119729

Houston Service Industries

October 2008



Control Panels USA Inc.
2530 Shell Road
Georgetown, TX 78628
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CP USA Job #08-3751

CP USA Project Manager: Joe Kornele



Control Panels USA Inc.

SCHEDULE OF EQUIPMENT

ITEM #	DESCRIPTION	MANUFACTURER	PART NUMBER	QUANTITY	UNIT
	Control Panel				
1	Enclosure, Type 4, Wall mount, with quarter turn latches	Saginaw	SCE-24EL2008LP	1	each
2	Back Panel	Saginaw	SCE-24P20	1	each
3	Circuit Breaker, 5 Amp, 1 Pole, UL489	Siemens	5SJ41111-7HG40	1	each
4	Surge Suppressor, 120VAC, 2.5Amp, filtering, 45KA, 10 yr warranty	Control Concepts	IC+102	1	each
5	Power Supply, 24V, 0.6A, Current Limiting, Short Circuit & Overload protection built in	Sola	SDP06-24-100T	1	each
6	PLC Processor, Micrologix, 120VAC, 14 AC Inputs, 10 Relay Outputs, 2 port	Allen-Bradley	1762-L24AWA	1	each
7	Analog Input Module, 4 Point	Allen-Bradley	1762-IF4	1	each
8	Ethernet Adapter Communication Module	Allen-Bradley	1761-NET-ENI	1	each
9	Micrologix Cable, 8 pin Mini Din to 8 pin Mini Din, 6.5 feet	Allen-Bradley	1761-CBL-HM02	1	each
10	2 Line Text Display	EZ Automation / AVG	EZ-220	1	each
11	Communication Cable between Processor & Touchscreen	EZ Automation / AVG	EZ-MLOGIX-CBL	1	each
12	Relay, DPDT, 10A	Finder	55.32.8.120.0030	1	each
13	Relay Base, 4-pole	Finder	94.04	1	each
14	Pilot Light, 30mm, Nema 4X, LED, Full Voltage, Red	C3 Controls	FVLU120LR-PLLRD	2	each
15	Pushbutton, Momentary, Black, 30mm, Heavy Duty Nema 4X, 1 NO Nema rated Contact	C3 Controls	PBO-FCBK-NO	1	each
16	Current Transducer, 4-20mA, 0-50, 0-100, 0-200 Amps	Veris	H721HC	1	each
	Typical Equipment on Each Panel				
17	Terminal Block, Feed Through, Finger Safe, 26-10awg, 41 Amp, 800Volt, Type UT4	Phoenix Contact	3044102	A/R	each
18	Ground Terminal Block, Finger Safe, 26-10awg, 41 Amp, 800Volt, Type UT4-PE	Phoenix Contact	3044128	A/R	each
19	Ground Bus Bar	Square D	PK Series	A/R	each
20	Wire Way	IBOCO	T1 Series	A/R	ft



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Part Information - SCE-24EL2008LP



Part Details - SCE-24EL2008LP

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Part Number: SCE-24EL2008LP

Description: EL Enclosure

Height: 24.00 inches

Width: 20.00 inches

Depth: 8.00 inches

Page Number: 157

List Price: \$275.56

Panel: SCE-24P20 -

Product Code: E3

Est. Shipweight: 35.00 lbs.

NEMA Rating: 12 & 4

Construction -

- 0.075 In. carbon steel.
- Seams continuously welded and ground smooth.
- Flange trough collar around all sides of door opening.
- Oil-resistant gasket.
- Collar studs provided for mounting optional panels.
- Concealed hinge.
- Removable and interchangeable doors.
- Black quarter turn latches on three sides of the doors.
- Latches are opened or closed with a screwdriver.
- Mounting holes in back of enclosure.
- Mounting hardware, sealing washer and hole plug included.
- Removable print pocket.
- Ground studs on door and body.

Similar Partnumbers -

- [SCE-12EL1206LP](#)
- [SCE-12EL2406LP](#)
- [SCE-16EL1206LP](#)
- [SCE-16EL1208LP](#)
- [SCE-16EL1408LP](#)
- [SCE-16EL1606LP](#)
- [SCE-16EL1608LP](#)
- [SCE-16EL2006LP](#)
- [SCE-16EL2008LP](#)
- [SCE-20EL1206LP](#)
- [SCE-20EL1606LP](#)
- [SCE-20EL1608LP](#)
- [SCE-20EL1612LP](#)
- [SCE-20EL2006LP](#)



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Application -

Designed to house electrical and electronic controls, instruments and components. Provides protection from dust, oil and water. For outdoor application a drip shield is recommended.

Finish -

ANSI-61 gray urethane polyester powder coating inside and out over phosphatized surfaces. Stainless steel enclosures are Type 304 stainless with #4 brushed finish. Optional panels are powder coated white epoxy polyester.

Options -

- Optional Tamper-resistant inserts are available.
- Optional mounting feet available.
- Door hardware available.

Industry Standards -

NEMA Type 4, 12, & 13
UL Listed Type 4 & 12
CSA Type 4 & 12
IEC 60529 IP 66

Notes -

Interchangeable latches and handles found on pages 147-148.


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Part Information - SCE-24P20



Part Details - SCE-24P20

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Part Number: SCE-24P20
Description: Subpanel, Bent
Height: 21.00 inches
Width: 17.00 inches
Depth: 0.88 inches
Page Number: 177
List Price: \$42.79
Product Code: P3
Est. Shipweight: 11.00 lbs.
NEMA Rating: N/A
Edge Flanges: Four
Configuration: C


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Similar Partnumbers -

- [SCE-12DLP12](#)
- [SCE-12P10](#)
- [SCE-12P12](#)
- [SCE-12P24](#)
- [SCE-14P12](#)
- [SCE-14P8](#)
- [SCE-16DLP14](#)
- [SCE-16P10](#)
- [SCE-16P12](#)
- [SCE-16P14](#)
- [SCE-16P16](#)
- [SCE-20P12](#)
- [SCE-20P16](#)
- [SCE-20P20](#)
- [SCE-20P20AL](#)
- [SCE-24P16](#)
- [SCE-24P24](#)
- [SCE-30P16](#)
- [SCE-30P20](#)
- [SCE-30P24](#)
- [SCE-30P30](#)
- [SCE-36P16](#)
- [SCE-36P24](#)
- [SCE-36P30](#)

Installation Information -

- [Sub-Plate Layout & Grounding](#)

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Finish -

Powder coated white epoxy polyester.

Options -

Sub-plates can be special ordered in Stainless Steel or Galvanized material. Please consult a factory representative for assistance.

Control Circuit Protection


New 5SJ Branch Circuit Protector

5SJ41 70 mm mounting depth

Features

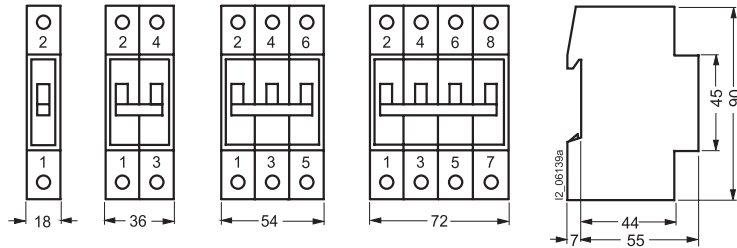
All new 5SJ41 miniature circuit breakers are designed to comply with **UL489** and **CSA 22.2 No. 5-02** standards. They are used in single pole, branch circuit protection applications up to 240 VAC maximum and 60 VDC maximum. Refer to Technical Data (page 16/5) for additional information.

Selection and ordering data

	I_n	Characteristic B		Characteristic C		Characteristic D	
		Order No.	List Price \$	Order No.	List Price \$	Order No.	List Price \$
	A		1 item		1 item		1 item
 <p>1-pole</p> <p>1 2</p>	0.3	—		5SJ4114-7HG40	58.00	5SJ4114-8HG40	58.00
	0.5	—		5SJ4105-7HG40	58.00	5SJ4105-8HG40	58.00
	1	—		5SJ4101-7HG40	58.00	5SJ4101-8HG40	58.00
	1.6	—		5SJ4115-7HG40	58.00	5SJ4115-8HG40	58.00
	2	—		5SJ4102-7HG40	58.00	5SJ4102-8HG40	58.00
	3	—		5SJ4103-7HG40	58.00	5SJ4103-8HG40	58.00
	4	—		5SJ4104-7HG40	58.00	5SJ4104-8HG40	58.00
	5	—		5SJ4111-7HG40	58.00	5SJ4111-8HG40	58.00
	6	5SJ4106-6HG40	58.00	5SJ4106-7HG40	58.00	5SJ4106-8HG40	58.00
	8	—		5SJ4108-7HG40	58.00	5SJ4108-8HG40	58.00
	10	5SJ4110-6HG40	58.00	5SJ4110-7HG40	58.00	5SJ4110-8HG40	58.00
	13	5SJ4113-6HG40	58.00	5SJ4113-7HG40	58.00	5SJ4113-8HG40	58.00
	15	5SJ4118-6HG40	58.00	5SJ4118-7HG40	58.00	5SJ4118-8HG40	58.00
	16	5SJ4116-6HG40	58.00	5SJ4116-7HG40	58.00	5SJ4116-8HG40	58.00
	20	5SJ4120-6HG40	58.00	5SJ4120-7HG40	58.00	5SJ4120-8HG40	58.00
	25	5SJ4125-6HG40	58.00	5SJ4125-7HG40	58.00	5SJ4125-8HG40	58.00
	30	5SJ4130-6HG40	58.00	5SJ4130-7HG40	58.00	5SJ4130-8HG40	58.00
	32	5SJ4132-6HG40	58.00	5SJ4132-7HG40	58.00	5SJ4132-8HG40	58.00
	35	5SJ4135-6HG40	62.00	5SJ4135-7HG40	62.00	5SJ4135-8HG40	62.00
	40	5SJ4140-6HG40	62.00	5SJ4140-7HG40	62.00	5SJ4140-8HG40	62.00
	45	5SJ4145-6HG40	64.00	5SJ4145-7HG40	64.00	5SJ4145-8HG40	64.00
	50	5SJ4150-6HG40	66.00	5SJ4150-7HG40	66.00	5SJ4150-8HG40	66.00
	60	5SJ4160-6HG40	70.00	5SJ4160-7HG40	70.00	5SJ4160-8HG40	70.00
	63	5SJ4163-6HG40	70.00	5SJ4163-7HG40	70.00	5SJ4163-8HG40	70.00

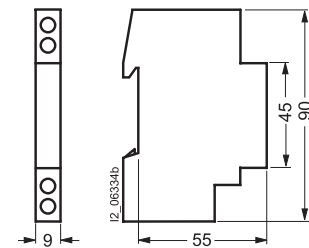
5SX2 supplementary protectors

5SX2,

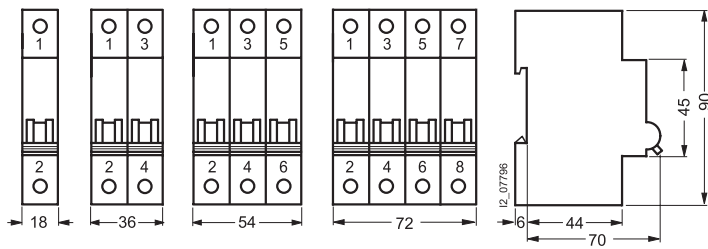


5SX9 auxiliary switch, 5SX9 fault signal

Additional component for 5SX2; can be retrofitted 5SX9 1.., 5SX9 2..

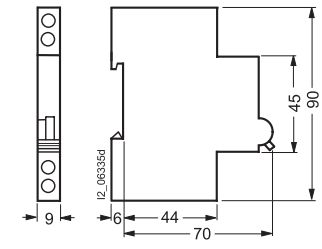


5SY4, 5SY5 supplementary protectors 5SJ4, single pole branch circuit protector

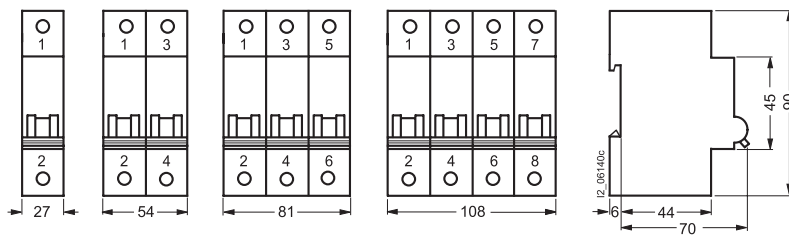


5ST3 auxiliary switch 5ST3 fault signal contact

can be retrofitted to 5SY4, 5SY5, 5SP4

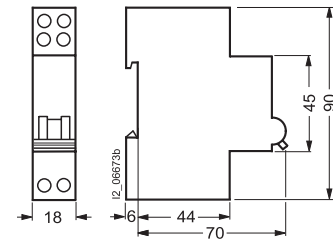


5SP4 supplementary protectors



5ST3 shunt trip 5ST3 undervoltage release

can be retrofitted to 5SY4, 5SY5, 5SP4



Control Circuit Protection

General Data

5SJ4 Branch Circuit Protector

Technical Data

Specification	5SJ41 Mini-Breaker		
Tripping characteristic	B	C	D
Number of poles	1		
Rated voltage (UL 489)	V AC: 240 max. V DC: 60 max.		
Operating voltage, min.	24 VAC/DC		
Rated current	6 to 63 A	0.3 to 63 A	0.3 to 63 A
Interrupting Rating (UL 489) AC: Max. RMS Symmetrical	V AC 240: 14 kA; V DC 60: 10 kA	V AC 240: 14 kA (0.3 - 40 A) V AC 240: 5 kA (45 - 63 A) V DC 60: 10 kA (0.3 - 63 A)	V AC 240: 14 kA (0.3 - 20 A) V AC 240: 5 kA (25 - 63 A) V DC 60: 10 kA (0.3 - 63 A)
Standards	UL 489, CSA 22.2 No. 5-02, IEC/EN 60 898		
Certifications	UL, cUL, File No. E 243414		
Degree of protection	IP 10 acc. to DIN EN 60 529; IP 40 when panel mounted		
Device depth	70 mm		
Mounting technique	Standard 35 mm DIN rail		
Terminals	Identical screw terminals on both line and load sides		
Terminal tightening torque	31 lbs. in. (3.5 Nm)		
Wire Size	14-4 AWG (1.5 - 25 mm ²) 60/75°C, Cu only		
Recommended Wire Strip Length	0.59 in. (15 mm)		
Mounting Position	As Required		
Ambient temperature	-13° to +113°F (-25° to +45°C) temporary: +131°F (+55°C); max. humidity: 95%		
Calibration temperature	25°C (77°F) acc. to UL 489 30°C (86°F) acc. to EN 60 898		
Storage temperature	-40° to +167°F (-40° to +75°C)		
Resistance to vibration	60 m/s ² at 10 Hz up to 150 Hz acc. to IEC 60 068-2-6		
Dimensions	see catalog page 16/23		

Control Circuit Protection

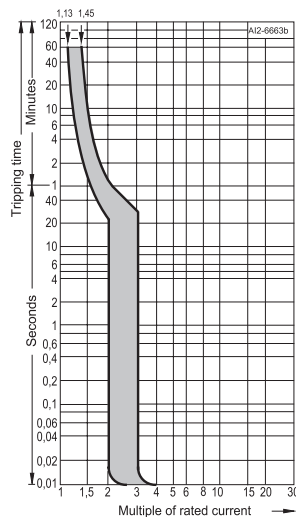
General Data

Trip characteristics

Tripping characteristics acc. to EN 60 898

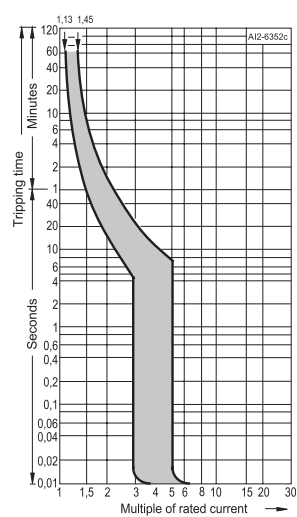
Tripping characteristic A, -5

Type A characteristic is designed to protect very sensitive circuits such as semiconductors. Magnetic trip point - 2 to 3 times I_n rating. Thermal trip point - 1.13 to 1.45 protector rating.



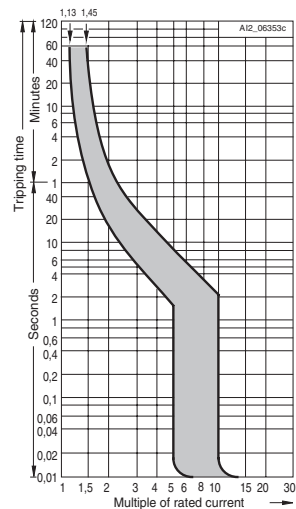
Tripping characteristic B, -6

Type B characteristic designed for European residential circuit protection. This characteristic can also be used for protection of computers and electronic equipment. Magnetic trip point - 3 to 5 times I_n rating. Thermal trip point - 1.13 to 1.45 protector rating.



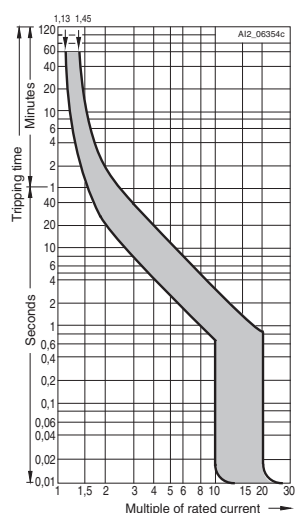
Tripping characteristic C, -7

Type C characteristic is for general device protection in control circuits. Magnetic trip point - 5 to 10 times I_n rating. Thermal trip point - 1.13 to 1.45 protector rating.



Tripping characteristic D, -8

Type D characteristic is designed for high inrush loads. Magnetic trip point - 10 to 20 times I_n rating. Thermal trip point - 1.13 to 1.45 protector rating.







For different ambient temperatures, the current values of the delayed tripping operation change by approximately 5% per 10°K temperature difference. Specifically they increase for temperatures below 25°C (5SJ41), 30°C (5SP, 5SX, 5SY) and decrease for temperatures above 25°C (5SJ41), 30°C (5SP, 5SX, 5SY).

For DC voltages the maximum current values of the instantaneous tripping operation increase by a factor of 1.2.

If more than one electrical circuit is loaded in a series of miniature circuit breakers or supplementary protectors, the resulting increase in ambient temperature affects the characteristic curve. In this case an additional correction factor found in the following table must be used.

Number	1	2 - 3	4 - 6	> 7
Correction factor K	1.00	0.90	0.88	0.85

 A Subsidiary of the Liebert Corporation		Technical Specification			
		IC+102			
 		<p>CONNECTION DIAGRAM</p> <div><div>LINE</div><div>LOAD</div></div> <div><div>POWER SOURCE CONFIGURATION</div><div><div>L</div><div>N</div><div>GND</div></div><div><div>L</div><div>N</div><div>GND</div></div><div><div>L</div><div>N</div><div>GND</div></div></div> <div>TO LOAD OR EQUIPMENT TO PROTECT</div>			
<p>The Islatrol Plus is a series connected high-frequency noise filter with transient protection. The Islatrol Plus units offer the flexibility of either receptacle/line cord connection or hard-wired connection to critical loads up to 30 Amperes. Applications include industrial or office equipment, computers placed in harsh environments, etc.</p>					
Nominal Operating Voltage		120 VAC, Single Phase			
Operating Voltage Range		120 VAC +/- 25%			
Operating Frequency Range		47 - 63 Hz			
Rated Output (Amps)		2.5 Amperes			
ANSI/IEEE C62.41 Category		Category A & B			
Connection Type		Series Connected, Terminals #22 – #12			
Phase Configuration		2 Wire + Gnd			
Size		4 x 2.88 x 1.81 (Inches)			
Enclosure		High Impact Plastic			
Weight		1.0 lbs. (0.45 kgs.)			
Modes Of Protection		L - N, L - G, N - G			
Indication of Suppression Status		Green LED Power Indication			
Response Time		< .5 ns Normal mode			
Operating Temperature		-40°C TO 45°C			
Operating Humidity		0% TO 95% Non-condensing			
Certifications		UL 1283, CUL, ISO 9001			
Warranty		10 Year			
Maximum Continuous Operating Voltage (MCOV)					
Line to Neutral		150 VAC			
Peak Surge Current Capability (8 x 20µs)					
Line to Neutral		15,000 Amps			
Line to Ground		15,000 Amps			
Neutral to Ground		15,000 Amps			
Total		45,000 Amps			
Load Surge Current Rating					
10 MSEC		5 x Nominal			
1 SEC		3 x Nominal			
10 SEC		2 x Nominal			
ANSI/IEEE C62.41 Cat A Ringwave (6 kV, 200A, 100 kHz)					
Normal Mode		1.0 V			
Common Mode		302 V			
ANSI/IEEE C62.41 Cat B Ringwave (6 kV, 500A, 100 kHz)					
Normal Mode		178 V			
Common Mode		302 V			
Frequency Response					
Normal Mode		60 dB minimum, forward/reverse, 100 kHz to 50 MHz			
Common Mode		60 dB minimum, forward/reverse, 5 MHz to 50 MHz			

SDP™ Low Power DIN Rail Series

The compact, lightweight DIN Rail power supplies come in output voltages from 5 to 48 Vdc and power ratings of up to 100 Watts. These extra small, efficient units are designed specifically for the industrial environment. Each unit is rated from -10°C to 70°C, with no derating necessary until above 60°C.

Many extra “industrial” features are standard for the SDP PowerBoost™ overload circuitry can start up industrial loads (i.e. motors, relays, solenoids and DC-DC converters), that can cause ordinary power supplies to foldback or shutdown. Each unit contains a DC indicator and front panel adjustment potentiometer. With the Sola SDP series, you can count on a high grade design.



UL **US**
UL 508 Listed
IND. CONT.
EQ.E61379

C **UL** **US**
UL 60950
E137632
CUL/CSA-C22.2
No. 234-M90

CE
EMC and
Low Volt.
Directive

Features

- Ultra slim 15W footprint
- No tools required for mounting
- Adjustable output
- PowerBoost™ industrial overload design
- Overvoltage, short circuit protection
- NEC Class 2 Current Limited
- Continuous short circuit protection
- Low output noise
- Screw terminal connections
- RoHS Compliant
- Three year warranty

Related Products

- SDN™ Series
- SCP Series
- SCL Series

Applications

- Industrial Control
- Process Control
- Machine Control
- Building Automation
- Instrumentation

Selection Table

Catalog Number	DC Output Voltage	Output Current	Ripple / Noise	Size (H x W x D)
SDP 5-5-100T	5 - 6 V	5 A	<50 mVpp	2.95 in x 1.77 in x 3.58 in (75 mm x 45 mm x 91 mm)
SDP 2-12-100T	10 - 12 V	3 - 2.5 A		
SDP 3-15-100T	12 - 15 V	4.2 - 3.4 A		
SDP 1-48-100T	48 - 56 V	1 A		2.95 in x 0.9 in x 3.8 in (75 mm x 22.8 mm x 96.7 mm)
SDP 06-24-100T	24-28 Vdc	0.6 A		
SDP 1-24-100T		1.3 A		
SDP 2-24-100T		2.1 A		
SDP 4-24-100LT		3.8 A		
SDP 4-24-100RT*		4.2 A		2.95 in x 2.85 in x 3.8 in (75 mm x 72.5 mm x 96.7 mm)

* NEC Class 1

Visit our website at www.solahd.com or
contact Technical Services at (800) 377-4384 with any questions.

SDPTM Series Specifications (24 V models)

Description	Catalog Number				
	SDP 06–24–100T	SDP 1–24–100T	SDP 2–24–100T	SDP 4–24–100LT	SDP 4–24–100RT
Input					
Input Voltage ¹	85-264 Vac, 90-375 Vdc			85-132 / 176-264 Vac, 210-375 Vdc	
Input Frequency	47-63 Hz				
Input Current	0.4 A / 0.25 A	0.7 A / 0.4 A	1.1 A / 0.7 A	1.8 A / 1.0 A	2.2 A / 1.2 A
External Fusing	Not required. Unit provides internal fuse (T3A, not accessible)				
Hold–Up Time	> 25 ms				
Efficiency	> 80% typ.	> 83% typ.	> 86% typ.	> 88% typ.	
Losses	< 3.75 W typ.	< 6.1 W typ.	< 8.1 W typ.	< 12 W typ.	
Output					
Output Voltage	24 V (22.5 - 28.5 Vdc Adj.)			24 V (24 - 25.7 Vdc Adj.)	24 V (22.5 - 28.5 Vdc Adj.)
Voltage Regulation	Static 0.5% V _{out} ¹ , dynamic + 2% V _{out} overall\				
Ripple/Noise ²	< 50 mVpp				
Overvoltage Protection (OVP)	> 30 Vdc, but < 33 Vdc, auto recovery			> 26 Vdc, but < 27.2 Vdc, auto recovery	> 30 Vdc, but < 33 Vdc, auto recovery
Output Noise Suppression	Radiated EMI values below EN61000-6-2				
Rated Continuous Loading	0.63 A @ 24 Vdc / 0.54 A @ 28 Vdc	1.3 A @ 24 Vdc / 1.1 A @ 28 Vdc	2.1 A @ 24 Vdc / 1.8 A @ 28 Vdc	3.8 A @ 24.5 Vdc	4.2 A @ 24.5 Vdc / 3.6 A @ 28 Vdc
Overload Behavior	Continuous operation at overload/short-circuit: up to 1.5 x Nominal Current Continuous				
Protection	Unit is continuously protected against short-circuit, overload and open-circuit.				
Power Back Immunity	35 V				
Installation					
Status Indicators	Green LED on, when V _{out} “OK”.				
Case & Mounting	Molded plastic housing using UL 94 approved flameproof material rating 94V-2. Simple snap-on to DIN TS35/7.5 or TS35/15 rail system.				
Dimensions					
(H x W x D) (in/mm)	2.95 x 0.9 x 3.8 (75 x 22.8 x 96.7)	2.95 x 1.77 x 3.58 (75 x 45 x 91)		2.95 x 2.85 x 3.8 (75 x 72.5 x 96.7)	
Weight – lbs (kg)	0.35 lbs (.16 kg)	0.5 lbs (.23 kg)		0.7 lbs (.32 kg)	
Mounting Orientation	Standard: Vertical; Optional: Horizontal or on top (Contact Technical Services).				
Ventilation/Cooling •Free space for cooling	Normal convection, no fan required; Above/below: 25 mm recommended.				
Connection •Connector size range	Input: screw terminals, connector size range: 20-12AWG (1.5 - 6 mm²) for solid or stranded conductors.				
General					
Temperature	Storage: -25°C...+85°C Operation: -10°...+60°C full power with linear derating to half power from 60°C to 70°C. (Convection cooling, no forced air required).				
MTBF	> 500,000 hours according to Telcordia/Bellcore Document SR-332, Issue 1.				
Humidity	Up to 90% RH, noncondensing; IEC 68-2-2, 68-2-3				
Electromagnetic Emissions (EME)	EN61000-6-3 (Includes EN61000-6-4) Class B (EN 55022) incl. Annex A				
Electromagnetic Immunity (EMI)	EN61000-6-2 (Includes EN61000-6-1) (EN55024) Criterion A: no derogation of performance				
Safe Low Voltage	SELV (acc. EN60950)				
Protection Class/Voltage	IP20 (IEC529), Protection Class 1 (IEC536)				
Warranty	3 years				
Safety					
CB Scheme, EN60950, UL60079-15 (Class 1, Zone 2 Hazardous Locations, Temp Class T3), UL508 Listed, cULus, UL 60950, cURus, CE (LVD 73/23 & 93/68/EEC). (EMC 89/336 & 93/68/EEC). EN61000-3-2, NEC Class 2 power supply acc. To NFPA 70 art. 725-41 (a)(2). ³					

Notes:

1. Not UL listed for DC input.
2. Ripple/noise is stated as typical values when measured with a 20 MHz, bandwidth scope and 50 Ohm resistor.
3. For all models except SDP 4-24-100LT.

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contact Technical Services at (800) 377-4384 with any questions.

SDP™ Series Specifications (Other Voltages)

Description	Catalog Number			
	SDP 5–5–100T	SDP 2–12–100T	SDP 3–15–100T	SDP 1–48–100T
Input				
Input Voltage¹	85-264 Vac, 90-375 Vdc			
Input Frequency	47-63 Hz			
Input Current	0.6 A @ 102 Vac; 0.33 A @196 Vac		1.0 A @ 102 Vac; 0.6 A @ 196 Vac	<1.0 A @ 100 Vac; <0.6 A @ 196 Vac
External Fusing	Not required. Unit provides internal fuse (T3A, not accessible)			
Hold–Up Time	> 25 ms			
Efficiency	> 80% typ.		> 86% typ.	> 90% typ.
Losses	7.5 W typ.	8.1 W typ.	< 8.1 W typ.	
Output				
Output Voltage	5 - 5.5 Vdc (5 - 6 min adj.)	12 Vdc (9.9 - 12.1 min adj.)	15 Vdc (11.9 - 15.1 min adj.)	48 Vdc (48 - 56 min adj.)
Voltage Regulation	< 2% Dynamic; < 0.5% Static			
Ripple/Noise²	< 50 mVpp			
Overvoltage Protection (OVP)	> 6.7 Vdc	> 18 Vdc	> 20 Vdc	> 56 Vdc
Output Noise Suppression	Radiated EMI values below EN61000-6-2			
Rated Continuous Loading	I _{out} = 5A @ V _{out} = 5.1V	3A @ 10 Vdc 2.5A @12 Vdc	4.2A @ 12 Vdc 3.4A @ 15 Vdc	Up to 1.05A @ 48 V 0.9A @ 56 V
Overload Behavior	Continuous operation at overload/short-circuit: up to 1.5 x Nominal Current Continuous			
Protection	Unit is continuously protected against short-circuit, overload and open-circuit.			
Power Back Immunity	10 V	22 V		80 V
Installation				
Status Indicators	Green LED on, when V _{out} “OK”.			
Case & Mounting	Molded plastic housing using UL 94 approved flameproof material rating 94V-2. Simple snap-on to DIN TS35/7.5 or TS35/15 rail system.			
Dimensions				
(H x W x D) (in/mm)	2.95 x 1.77 x 3.58 (75 x 45 x 91)			
Weight – lbs (kg)	0.5 lbs (.23 kg)			
Mounting Orientation	Standard: Vertical; Optional: Horizontal or On Top (Contact Technical Services).			
Ventilation/Cooling •Free space for cooling	Normal convection, no fan required; Above/below: 25 mm recommended.			
Connection •Connector size range	Input: screw terminals, connector size range: 20-12 AWG (1.5 - 6 mm²) for solid or stranded conductors.			
General				
Temperature	Storage: -25°C...+85°C Operation: -10°...+60°C full power with linear derating to half power from 60°C to 70°C. (Convection cooling, no forced air required).			
MTBF	> 500,000 hours according to Telcordia/Bellcore Document SR-332, Issue 1.			
Humidity	Up to 90% RH, noncondensing; IEC 68-2-2, 68-2-3			
Electromagnetic Emissions (EME)	EN61000-6-3 (Includes EN61000-6-4) Class B (EN 55022) incl. Annex A			
Electromagnetic Immunity (EMI)	EN61000-6-2 (Includes EN61000-6-1) (EN55024) Criterion A: no degradation of performance			
Safe Low Voltage	SELV (acc. EN60950)			
Protection Class/Voltage	IP20 (IEC529), Protection Class 1 (IEC536)			
Warranty	3 years			
Safety				
CB Scheme, EN60950, UL60079-15 (Class 1, Zone 2 Hazardous Locations, Temp Class T3), UL508 Listed, cULus, UL 60950, cURus, CE (LVD 73/23 & 93/68/EEC), (EMC 89/336 & 93/68/EEC). EN61000-3-2, NEC Class 2 power supply acc. To NFPA 70 art. 725-41 (a)(2).³				

Notes:

1. Not UL listed for DC input.
2. Ripple/noise is stated as typical values when measured with a 20 MHz, bandwidth scope and 50 Ohm resistor.
3. Not to exceed 30 watts total.

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MicroLogix 1200 Controllers

General Specifications

Cat. No.	1762-L24AWA 1762-L24AWAR	1762-L24BWA 1762-L24BWAR	1762-L24BXB 1762-L24BXBR	1762-L40AWA 1762-L40AWAR	1762-L40BWA 1762-L40BWAR	1762-L40BXB 1762-L40BXBR
Dimensions (HxWxD), Approx.	90 x 110 x 87mm (3.54 x 4.33 x 3.43 in)★			90 x 160 x 87mm (3.54 x 6.30 x 3.43 in)★		
Weight	0.9 kg (2.0 lb)			1.1 kg (2.4 lb)		
Input Voltage Range	85...265V ac @ 47...63 Hz		20.4...26.4V dc	85...265V ac @ 47...63 Hz		20.4...26.4V dc
Input Voltage, Nom.	100/120V ac, 200/240V ac		24V dc	100/120V ac, 200/240V ac		24V dc
Apparent Input Power, Max.	68 VA	70 VA	27 VA	80 VA	82 VA	40 VA
Real Input Power, Max.	29W	31W	27W	37W	38W	37W
Power Supply Maximum Inrush	25A for 8 ms @ 120V ac 40A for 4 ms @ 240V ac		15A for 20 ms @ 24V dc	25A for 8 ms @ 120V ac 40A for 4 ms @ 240V ac		15A for 20 ms @ 24V dc
Power Supply Output	400 mA @ 5V dc 350 mA @ 24V dc	400 mA @ 5V dc* 350 mA @ 24V dc*	400 mA @ 5V dc 350 mA @ 24V dc	600 mA @ 5V dc 500 mA @ 24V dc	600 mA @ 5V dc‡ 500 mA @ 24V dc‡	600 mA @ 5V dc 500 mA @ 24V dc
User Output Power	—	24V dc @ 250 mA* 400 µF max.	—	—	24V dc @ 400 mA‡ 400 µF max.	—
Operating Temperature	0...55 °C (32...131 °F) ambient					
Storage Temperature	-40...85 °C (-40...185 °F) ambient					
Operating Humidity	5...95% (without condensation)					
Vibration						
Operating	10...500 Hz, 5 g, 0.030 in max. peak-to-peak					
Relay Operation	1.5 g					
Shock						
Shock, Operating	30 g					
Shock, Relay Operation	7 g					
Shock, Non-Operating	50 g panel mounted, 40g DIN rail mounted					
Agency Certification	• UL 508 • C-UL under CSA C22.2 no. 142 • Class I, Div. 2, Groups A, B, D, B (UL 1604, C-UL under CSA C22.2 no. 213) • CE/C-Tick compliant for all applicable directives/acts.					
Electrical/EMC	The controller has passed testing at the following levels: • IEC1000-4-2: 4 kV contact, 8 kV air, 4 kV indirect • IEC1000-4-3: 10V/m • IEC1000-4-4: 2 kV, 5 kHz; communication cable: 1 kV, 5 kHz • IEC1000-4-5: communication cable 1 kV DM (differential mode) • I/O: 2 kV CM (common mode), 2 kV DM (differential mode) • Power Supply: 4 kV CM (common mode), 2 kV DM (differential mode) • IEC1000-4-6: 10V, communication cable 3V§					

★ Height = 104 mm (4.09 in) with DIN latch open.

⊗ Total load of the 5V, 24V, and user power output shall not exceed 12W.

‡ Total load of the 5V, 24V, and user power output shall not exceed 16W.

§ Conducted immunity frequency range may be 150 kHz to 30 MHz if the radiated immunity frequency range is 30 MHz to 1000 MHz.

MicroLogix 1200 Controllers

The MicroLogix 1200 controller is available with 24 or 40 built-in I/O. Controllers with 24V dc inputs that also have ac-input power supplies include a built-in power supply for user output power.

Cat. No.	Number of I/O	Input Type	Input Signal Delay	Output Type	Continuous Output Current, Max.	User Output Power
1762-L24BWA 1762-L24BWAR	14 inputs 10 outputs	24V dc sink or source	Selectable: 0.025, 0.075, 0.1, 0.25, 0.5, 1, 2, 4, 8, or 16 ms	Relay Contact	(See relay contact output specs.) • 8A/common • 30A total @ 150V ac • 20A total @ 240V ac	24V dc @ 250 mA
1762-L40BWA 1762-L40BWAR	24 inputs 16 outputs					24V dc @ 400 mA
1762-L24BXB 1762-L24BXBR	14 inputs 10 outputs			5 Relay 5 FET (24V dc)	(See FET and relay contact output specs.) • 7.5A/common • 30A total @ 150V ac • 20A total @ 240V ac	—
1762-L40BXB 1762-L40BXBR	24 inputs 16 outputs			8 Relay 8 FET (24V dc)		
1762-L24AWA 1762-L24AWAR	14 inputs 10 outputs	120V ac	On: 2...20 ms Off: 10...20 ms	Relay Contact	• 8A/common • 30A total @ 150V ac • 20A total @ 240V ac	
1762-L40AWA 1762-L40AWAR	24 inputs 16 outputs					

Input Specifications

Cat. No.	1762-L24AWA, 1762-L40AWA 1762-L24AWAR, 1762-L40AWAR	1762-L24BWA, 1762-L24BXB, 1762-L40BWA, 1762-L40BXB 1762-L24BWAR, 1762-L24BXBR, 1762-L40BWAR, 1762-L40BXBR	
		Inputs 0 to 3	Inputs 4 and up
On-State Voltage Range	79...132V ac	14...26.4V dc @ 55 °C (131 °F) 14...30.0V dc @ 30 °C (86 °F)	10...26V dc @ 55 °C (131 °F) 10...30.0V dc @ 30 °C (86 °F)
Off-State Voltage Range	0...20V ac	0...5V dc	
Operating Frequency	47...63 Hz	0...20 kHz	0...1 kHz (depends on scan time)
On-State Current			
Minimum	5.0 mA @ 79V ac	2.5 mA @ 14V dc	2.0 mA @ 10V dc
Nominal	12 mA @ 120V ac	7.3 mA @ 24V dc	8.9 mA @ 24V dc
Maximum	16.0 mA @ 132V ac	12.0 mA @ 30V dc	12.0 mA @ 30V dc
Off-State Leakage Current, Max.	2.5 mA	1.5 mA	
Impedance, Nom.	12 kΩ @ 50 Hz 10 kΩ @ 60 Hz	3.3 kΩ	2.7 kΩ
Inrush Current	250 mA	—	—

Relay Contact Output Specifications


Maximum Voltage	Current			Apparent Power	
	Make	Break	Continuous	Make	Break
240V ac	7.5A	0.75A	2.5A	1800 VA	180 VA
120V ac	15A	1.5A	2.5A		
125V dc	0.22A		1.0A	28 VA	

24V dc	1.2A	2.0A	
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FET Output Specifications

Cat. No.	1762-L24BXB, 1762-L24BXBR, 1762-L40BXB, 1762-L40BXBR	
	General Operation	High-Speed Operation★ (Output 2 Only)
On-State Voltage Drop		
at maximum load current	1V dc	—
at maximum surge current	2.5V dc	
Current Rating per Output		
maximum load	1.5A @ 30 °C (86 °F), 1.0A @ 55 °C (131 °F)	100 mA
minimum load	1.0 mA	10 mA
maximum leakage	1.0 mA	1.0 mA
Turn-On Time, Max.	0.1 ms	6 ms
Turn-Off Time, Max.	1.0 ms	18 ms
Repeatability, Max.	—	2 ms
Drift, Max.	—	1s per 5 °C (9 °F)

★ Output 2 has increased functionality over the other FET outputs. Output 2 can be used as the other FET outputs. But, in addition, within a limited current range, it may be operated at a higher speed. Output 2 also provides a pulse train output (PTO) or pulse width modulation output (PWM) function.

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MicroLogix 1200 System

General Resources

1762 MicroLogix 1200 I/O



**Expansion
I/O
Modules**

Specifications

**Digital
Output
Modules**

**Digital
Input
Modules**

**Analog
I/O
Modules**

Expansion I/O Modules

If an application requires more I/O than the built-in I/O provided by the MicroLogix 1200 controller, you can connect up to six 1762 expansion I/O modules to the MicroLogix 1200 controller to provide expanded I/O capacity. You can use digital and analog I/O modules in many combinations. The current loading capacity of the controller's built-in power supply may limit the number of I/O modules that can be connected to the controller.

MicroLogix 1200 expansion I/O modules include an integral high-performance I/O bus. Software keying prevents incorrect positioning within the system.

You may install expansion I/O modules to the right of the MicroLogix 1200 controller either on a panel with two mounting screws or on a DIN rail. Each expansion I/O module includes finger-safe terminal blocks for I/O wiring and a label to record I/O terminal designations.



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1762 MicroLogix 1200 I/O

Expansion I/O Modules

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MicroLogix 1200 expansion I/O modules include an integral high-performance I/O bus. Software keying prevents incorrect positioning within the system.

You may install expansion I/O modules to the right of the MicroLogix 1200 controller either on a panel with two mounting screws or on a DIN rail. Each expansion I/O module includes finger-safe terminal blocks for I/O wiring and a label to record I/O terminal designations.

Specifications

Dimensions (HxWxD), Approx.	90 x 40 x 87mm (3.543 x 1.575 x 3.425 in)★
Operating Temperature	0...55 °C (32...131 °F)
Operating Humidity	5...95% (without condensation)
Operating Altitude, Max.	2,000 m (6,561 ft)
Vibration	
Operating	10...500 Hz, 5 g, 0.015 in peak-to-peak
Relay Operation	2 g
Shock	
Operating	30 g panel mounted 20 g DIN-rail mounted
Relay Operation	7.5 g panel mounted 5 g DIN rail mounted
Non-Operating	40 g panel mounted 30 g DIN rail mounted
Agency Certification	<ul style="list-style-type: none"> • C-UL certified (under CSA C22.2 No. 142) • UL 508 Listed • CE compliant for all applicable directives
Hazardous Environment Class	Class I, Division 2, Hazardous Location, Groups A, B, C, D (UL1604, C-UL under CSA C22.2 No. 213)
Radiated and Conducted Emissions	EN50081-2 Class A
ESD Immunity (IEC 1000-4-2)	4 kV contact, 8 kV air, 4 kV indirect
Radiated Immunity (IEC 1000-4-3)	10V/m, 80-1000 MHz, 80% amplitude modulation, +900 MHz keyed carrier
Fast Transient Burst (IEC 1000-4-4)	2 kV, 5 kHz
Surge Immunity (IEC 1000-4-5)	2 kV common mode, 1 kV differential mode
Conducted Immunity (IEC 1000-4-6)	10V, 0.15...80 MHz✱

★ Height including mounting tabs is 110 mm (4.33 in).

✱ Conducted immunity frequency range may be 150 kHz...30 MHz if the radiated immunity frequency range is 30 MHz...1000 MHz.

Digital Output Modules

Cat. No.	Number of Outputs	Continuous Current per Output, Max.	Continuous Current per Module, Max.	Voltage Category	Operating Voltage Range	Off-State Leakage Current, Max.	Bus Current Load, Max.	Power Supply Distance Rating★
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1762-OA8	8 (2 sets of 4)	0.25A @ 55 °C (131 °F) 0.5A @ 30 °C (86 °F)	2.0A (1A per common) @ 55 °C (131 °F) 4.0A (2A per common) @ 30 °C (86 °F)	100...240V ac	85...265V ac	2 mA @ 132V 2.5 mA @ 265V	115 mA @ 5V dc (0.575W)	6
1762-OB8	8	0.5A @ 55 °C (131 °F) 1.0A @ 30 °C (86 °F)	4.0A @ 55 °C (131 °F) 8.0A @ 30 °C (86 °F)	24V dc	20.4...26.4V dc	1.0 mA	115 mA @ 5V dc (0.575W)	6
1762-OB16	16	0.5A @ 55 °C (131 °F) 1.0A @ 30 °C (86 °F)	4.0A @ 55 °C (131 °F) 8.0A @ 30 °C (86 °F)	24V dc	20.4...26.4V dc	1.0 mA	175 mA @ 5V dc (0.88W)	6
1762-OW8	8 (2 sets of 4)	2.5A*	16A (8A per common)	AC/DC normally open contact	5...265V ac 5...125V dc	0 mA	80 mA @ 5V dc (0.40W) 90 mA @ 24V dc (2.16W)	6
1762-OW16	16 (2 sets of 8)	2.5A*	16A (8A per common)	AC/DC normally open contact	5...265V ac 5...125V dc	0 mA	120 mA @ 5V dc (0.60W) 90 mA @ 24V dc (3.36W)	6

* The module may not be more than the specified number of modules away from the power supply of the controller.

* See relay contact rating table.

Digital Input Modules

Cat. No.	Number of Inputs	Voltage Category	Operating Voltage Range	On-State Current, Max.	Impedance, Nom.	Signal Delay, Max.	Off-State Voltage and Current, Max.	IEC Input Compatibility	Bus Current Load, Max.	Power Supply Distance Rating*
1762-IA8	8	100/120V ac	79...132V ac @ 47...63 Hz	16 mA @ 132V ac, 63 Hz	12 kΩ @ 50 Hz 10 kΩ @ 60 Hz	On/Off: 20 ms	20V ac 2.5 mA	Type 1+	50 mA @ 5V dc (0.25W)	6
1762-IQ8	8	24V dc (sink or source)	10...26.4V dc @ 55 °C (131 °F)	12 mA @ 30V dc	3 kΩ	On/Off: 8 ms	5V dc 1.5 mA	Type 1+	50 mA @ 5V dc (0.25W)	6
1762-IQ16	16	24V dc (sink or source)	10...30V dc @ 30 °C (86 °F)	12 mA @ 30V dc	3 kΩ	On/Off: 8 ms	5V dc 1.5 mA	Type 1+	60 mA @ 5V dc (0.3W)	6

* The module may not be more than the specified number of modules away from the power supply of the controller.

Analog I/O Modules


Cat. No.	Number of Inputs/Outputs	Analog Ranges	Bus Current Load, Max.	Overall Accuracy*	Resolution Across Full Range	Typical Update Period	Power Supply Distance Rating*
1762-IF4	4 differential (bipolar) inputs	Voltage: ±10V Current: 4...20 mA	40 mA @ 5V dc 50 mA @ 24V dc	±0.3% full scale @ 55 °C (131 °F) ±0.24% full scale @ 25 °C (77 °F)	15 bits	130, 250, 290, 450, or 530 ms (selectable)	6
1762-OF4	4 single-ended bipolar outputs	Voltage: 0...10V Current: 4...20 mA	40 mA @ 5V dc 165 mA @ 24V dc	±1.0% full scale @ 0...55 °C (131 °F) ±0.5% full scale @ 25 °C (77 °F)	12 bits	2.5 ms	6

1762-IF2OF2	2 differential (unipolar) inputs 2 single-ended (unipolar) outputs	Voltage: 0...10V Current: 4...20 mA	40 mA @ 5V dc 105 mA @ 24V dc	±0.5% full scale @ 55 °C (131 °F) ±0.3% full scale @ 25 °C (77 °F)	12 bits	2.5 ms	6
1762-IR4	4 RTD inputs	Input Types: 100Ω Platinum 385 200Ω Platinum 385 500Ω Platinum 385 1000Ω Platinum 385 100Ω Platinum 3916 200Ω Platinum 3916 500Ω Platinum 3916 1000Ω Platinum 3916 10Ω Copper 426 120Ω Nickel 672 120Ω Nickel 618 604Ω Nickel-Iron 518 0 to 150Ω 0 to 500Ω 0 to 1000Ω 0 to 3000Ω	40 mA @ 5V dc 50 mA @ 24V dc	[Autocalibration Enabled] @ 25 °C (77 °F) Ambient with Module Operating Temperature @ 25 °C (77 °F)‡ ±0.5 °C (°F) for Pt 385 ±0.4 °C (°F) for Pt 3916 ±0.2 °C (°F) for Ni ±0.3 °C (°F) for NiFe ±0.6 °C (°F) for Cu ±0.15Ω for 150Ω range ±0.5Ω for 500Ω range ±1.0Ω for 1000Ω range ±1.5Ω for 3000Ω range	Input filter and configuration dependent. Refer to the MicroLogix™ 1200 RTD/Resistance Input Module User Manual, publication number 1762-UM003, for more information.	Input filter and configuration dependent. Refer to the MicroLogix™ 1200 RTD/Resistance Input Module User Manual, publication number 1762-UM003, for more information.	6
1762-IT4	4 Thermocouple inputs	Input Types: Thermocouple Type J -210 to +1200 °C (-346 to +2192 °F) Thermocouple Type K -270 to +1370 °C (-454 to +2498 °F) Thermocouple Type T -270 to +400 °C (-454 to +752 °F) Thermocouple Type E -270 to +1000 °C (-454 to +1832 °F) Thermocouple Type R 0 to +1768 °C (+32 to +3214 °F) Thermocouple Type S 0 to +1768 °C (+32 to +3214 °F) Thermocouple Type B +300 to +1820 °C (+572 to +3308 °F) Thermocouple Type N -210 to +1300 °C (-346 to +2372 °F) Thermocouple Type C 0 to +2315 °C (+32 to + 4199 °F) millivolt inputs -50 to +50 mV -100 to +100 mV	40 mA @ 5V dc 50 mA @ 24V dc	±1.3 °C (±2.34 °F)	15 bits plus sign	Input filter and configuration dependent.	6

★ Includes offset, gain, non-linearity, and repeatability error terms.

✱ The module may not be more than the specified number of modules away from the power supply of the controller.

‡ Accuracy is dependent upon the Analog/Digital converter filter rate selection, excitation current selection, data format, and input noise.

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MicroLogix 1100



MicroLogix 1100

Accessories for MicroLogix 1000, 1100, 1200 and 1500

Accessories for MicroLogix 1000, 1100, 1200 and 1500

Programming Software

The RSLogix 500 ladder logic programming package helps you maximize performance, save project development time, and improve productivity. This product has been developed to operate on Windows 98 and above operating system. RSLogix 500 can be used for programming both the SLC 500 and MicroLogix controller families.

Description	Cat. No.	PGC
RSLogix 500 Starter Edition Progr. Software for MicroLogix controller families. (CD-ROM)	9324-RL0100ENE	n/a
RSLogix 500 Standard Edition Programming Software for SLC 500 and MicroLogix controller families. (CD-ROM)	9324-RL0300ENE	n/a
RSLogix 500 Professional Edition. CD-ROM also includes RSLogix Emulate 500, RSNetworkx for DeviceNet and RSNetworkx for ControlNet.	9324-RL0700NXENE	n/a

Discount Group PG

Programming Cable for MicroLogix 1000, 1100, 1200, and 1500 Channel 0 (8-pin Mini DIN)

Description	Length	Cable Type	Cat. No.	PGC
Cable to connect MicroLogix controller to an IBM compatible PC	2 m	8-pin Mini DIN to 9-pin D Shell	1761-CBL-PM02	MC1

Discount Group MC

Programming Cable for MicroLogix 1500 with 1764-LRP Processor, Channel 1 (9-pin RS-232)

Description	Length	Cable Type	Cat. No.	PGC
Cable to connect port 1 to the 9-Pin DTE port of a personal computer	3 m	9-pin D Shell to 9-pin D Shell	1747-CP3	SC1
Cable to connect the MicroLogix 1500 base port to an IBM compatible PC	2 m	9-pin D Shell to 8-pin Mini DIN	1761-CBL-PM02	MC1

Note: Only cables of series C or later can be used with MicroLogix 1100
Discount Group SC, MC

Network Interface Devices



1761-
NET-AIC
+



1761-NET-
DNI



1761-
NET-ENI

Description	Cat. No.	PGC
AIC+ Advanced Interface Converter: The AIC+ provides an interface to DH-485 networks from an RS-232 port. It can be used with all MicroLogix controllers, SLC 5/03 and higher, and a number of PanelView terminals.	1761-NET-AIC	MC1
DNI DeviceNet Interface: Peer-to-peer messaging between MicroLogix controllers and other devices using the DF1 Full-Duplex protocol (real time communications - no polling required)	1761-NET-DNI	MC1
ENI Ethernet Interface: The ENI provides EtherNet/IP connectivity for all MicroLogix controllers and other DF1 Full-Duplex devices: The ENIW provides also a basic level of Web Server functionality including: <ul style="list-style-type: none"> • Ability to display dynamically updated data values • Ability to label data values • Ability to modify data values (password protected) 	1761-NET-ENI	MC1
	1761-NET-ENIW	MC1

Note: External power is required for the network interface. The MicroLogix 1100 RS232/485 port does not provide any power for connected devices.

Discount Group MC

Network Cable

Use the communication cables listed below with MicroLogix 1000, 1200 and 1500 controllers. Cables come in several lengths and connector styles to provide connectivity between MicroLogix controllers and other devices.

Description	Connectors	Length	Cat. No.	PGC
Used to connect MicroLogix controller to Port 2 of 1761-NET-AIC+ or 1761-NET-DNI or 1761-HHP or PanelView	8-pin Mini DIN to 8-pin Mini DIN	0.5 m	1761-CBL-AM00	MC1
		2 m	1761-CBL-HM02	MC1
		5 m	2711-CBL-HM05	OI4
		10 m	2711-CBL-HM10	OI4
Used to connect MicroLogix 1500 Processor (LRP) or Port 1 of 1761-NET-AIC+ to 9-	9-pin D Shell to 9-pin D Shell	0.5 m	1761-CBL-AC00	MC1

pin DTE of Personal Computer		3 m	1747-CP3	SC1
Used to connect MicroLogix controller to Port 1 of 1761-NET-AIC+ or MicroLogix controller to PC or PanelView's to MicroLogix controller	8-pin Mini DIN to 9-pin D Shell	0.5 m	1761-CBL-AP00	MC1
		2 m	1761-CBL-PM02	MC1
		5 m	2711-CBL-PM05	OI4
		10 m	2711-CBL-PM10	OI4

Note: Do not connect a MicroLogix 1100 controller to another MicroLogix family controller such as MicroLogix 1000, 1200 or 1500 using a 1761-CBL-AM00 (8-pin Mini DIN to 8-pin Mini DIN) cable or equivalent.

This type connection will cause damage to the RS-232/485 communication port (Channel 0) of the MicroLogix 1100 and/or the controller itself.

Discount Group MC

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EZTEXT PANELS SPECIFICATIONS

Introduction

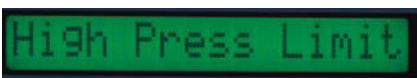


EZText Panels provide a low-cost, easy-to-use operator interface alternative for your PLC system. With easy to configure Windows-based software and simple installation, you can be connected and running in minutes. If your application requires pushbuttons, LEDs, or text display, but your budget is low, check out our complete line of EZText panels.

Features

The following features are common to all EZText panels:

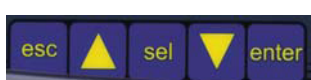
- LCD display
- Five user-defined pushbuttons (except EZ-SP)
- Five user-defined LEDs (except EZ-SP)
- Up to three embedded PLC data variables (except EZ-SP)
- Built-in menu system
- EMI filtered power supply to reduce communication problems



Display

Depending on the model, the LCD display window supports one, two or four message lines that can display up to 20 characters each (16 on EZ-SP). Messages are programmed using the EZText Programming Software and can be static text, dynamic text, or interactive. The messages are controlled by the PLC program.

Pushbuttons



The panels have sealed membrane pushbuttons that allow you to trigger PLC actions. Each pushbutton can be configured to function as one of three switch types:

Alternate switch — keeps its current state until the button is pushed again

Momentary switch — activated only while the button is being pushed

Set with release switch — similar to the alternate switch except that the PLC can control the release



Compatibility

The EZText panels can be connected to several types of PLCs: Allen-Bradley, GE, Mitsubishi, Omron, and Modicon. Review the PLC compatibility table below to determine if your PLC is supported. With the proper cable and the EZText programming software, you can be easily connected.

Getting started

Below is a quick checklist of what you will need to get started:

- EZText panel
- Programming cable
- 24VDC power supply
- PLC
- Cable to connect to PLC
- Personal computer
- EZText Programming Software

PLC Compatibility Table			
PLC	Model		Protocols
Allen-Bradley	MicroLogix 1000, 1200 and 1500SLC 5/03, /04, /05, PLC5 (w/DF1)		
GE	90/30, 90/70 and Versamax		SNPX
Mitsubishi	FX Series (all)		Direct, Multidrop
Omron	C200, C500		Host Link
Siemens	S7 300/400 PLCs, MPI Adapter		3964R protocol
DirectLOGIC	DL05 DL06		K-Sequence
			DirectNet
			MODBUS (Koyo addressing)
	DL105		K-Sequence
			DirectNet
			MODBUS (Koyo addressing)
	DL205	D2-230	K-Sequence
		D2-240	K-Sequence
			DirectNet
		D2-250-1 D2-260	K-Sequence
			DirectNet
			MODBUS (Koyo addressing)
	DL305	D2-240/250/260 DCM	DirectNet
		D3-330/330P	DirectNet
		D3-340	DirectNet
		D3-350	K-Sequence
			DirectNet
			MODBUS (Koyo addressing)
	DL405	D3-350 DCM	DirectNet
		D4-430	K-Sequence
			DirectNet
		D4-440	K-Sequence
			DirectNet
		D4-450	K-Sequence
			DirectNet
			MODBUS (Koyo addressing)
		All with DCM	DirectNet
	H2- WinPLC		MODBUS RTU (serial port)
	H2/H4 EBC (Think-N-Do Studio Version 6.5 or later required)		K-Sequence (serial port)
	H2-WinPLC/EBC w/Ethernet card option		Ethernet

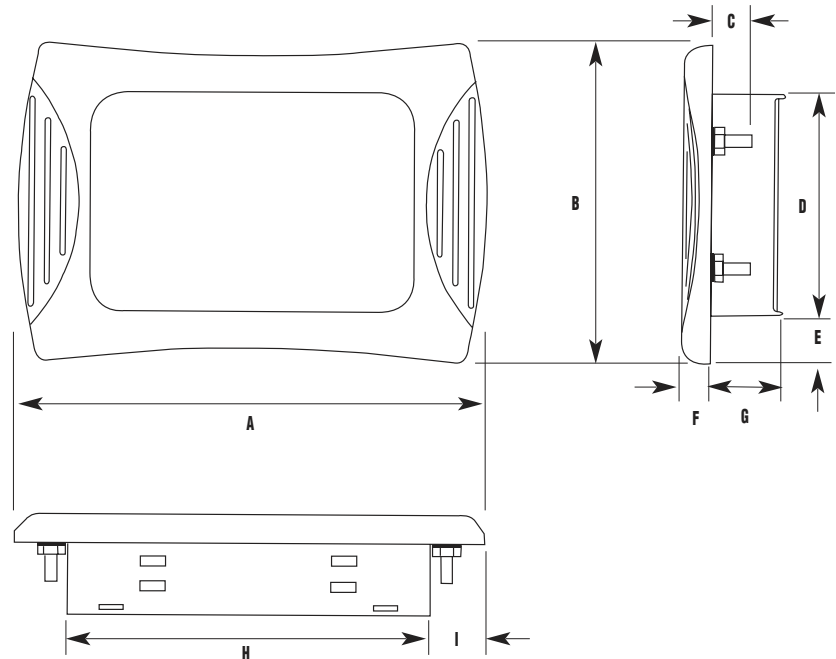


EZText DIMENSIONS AND INSTALLATION

All EZText panels are designed to be inserted into a rectangular cutout in some type of mounting surface and secured with screws or DIN clips. The four screws that protrude through the mounting surface secure the panel to the mounting surface. A rubber gasket provides a seal between the bezel and mounting surface. When properly mounted, all of the EZText panels comply with the NEMA 4 rating for indoor use.

The optional DIN clips are metal brackets that attach to the panel and secure the front panel to a mounting surface with a screw. This provides an alternative mounting solution to a panel or enclosure cutout.

Dimensions						
	A	B	C	D	E	F
EZ220/420	7.418 (188.419)	5.000 (126.998)	0.625 (15.875)	3.50 (88.9)	.750 (19.05)	.450 (11.430)
EZ220L/220P/SP	10.018 (254.458)	5.000 (126.998)	0.625 (15.875)	3.50 (88.9)	.750 (19.05)	.450 (11.430)
	G	H	I			
EZ220/420	1.154 (29.312)	5.750 (146.050)	.834 (21.184)			
EZ220L/220P/SP	1.154 (29.312)	8.350 (212.090)	.834 (21.184)			



Note: Panels use same mounting dimensions as comparable Optimate panels.

Mounting Accessories		
Part Number	Description	Price
EZ-TEXT-S-GSK	Standard replacement gasket (small) for EZ-220 and EZ-420	\$8.00
EZ-TEXT-L-GSK	Standard replacement gasket (large) for EZ-220L, EZ-220P and EZ-SP	\$9.00
EZ-BRK-2	DIN clips (pk. of 4)	\$34.00
EZ-TEXT-STUDS	Mounting studs (pk. of 4)	\$8.00
EZ-COMCON3	15-pin male D-sub connectors with terminal blocks, for connecting RS422 network cable from EZTouch or EZText panels	\$19.00
EZ-COMCON4	9-pin female D-sub connectors with terminal blocks	\$19.00
EZ-TEXT-CORE	EZText replacement ferrite cores	\$15.00
EZ-TEXT-PWRTERM	EZText replacement power terminal strip	\$12.00

EZ-220/420/220L

Overview

The EZ-220 and EZ-420 line of panels feature pushbuttons with LEDs, control pushbuttons, and an LCD display. The EZ-220L is a longer version of the EZ-220 panel with larger characters on the LCD display. Pushbuttons are often used to begin events or tasks in the PLC and are monitored for ON/OFF conditions in the ladder logic program. There are five function pushbuttons with LEDs and four control pushbuttons.

The LCD displays are either two lines by 20 characters (2x20) or four lines by 20 characters (4x20).

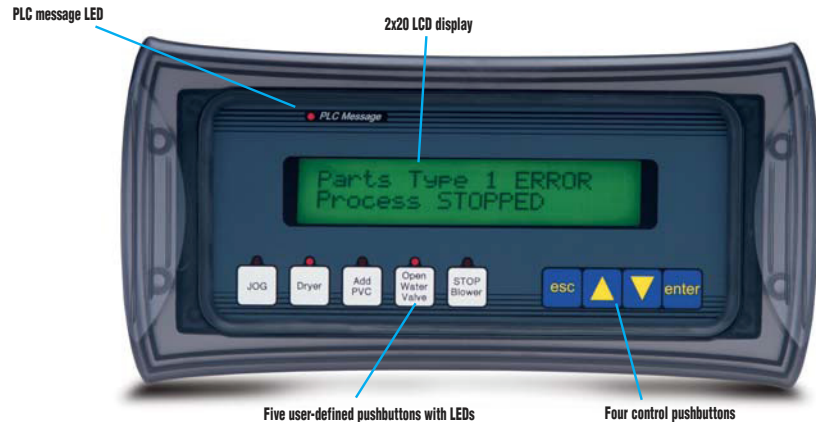
Descriptions

Control pushbuttons

There are four control pushbuttons on the front of the panels. These pushbuttons are used to scroll through messages. If a message contains embedded data that can be changed, the buttons can be used to adjust the value. The *enter* button will complete the entry or the *esc* button will clear/cancel the action.

User-defined pushbuttons

There are five pushbuttons that are user-defined. These pushbuttons can be configured as alternate, momentary, or alternate with PLC release. The pushbuttons can also be custom labeled to suit their function or application.



Pushbutton LEDs

Each pushbutton has an associated LED. They can be programmed to represent the status of the pushbutton or they can be programmed to be controlled by a function in the PLC program. The three different control types (alternate, momentary, or alternate with PLC release) will determine the LED response when the pushbuttons are pressed. The LED can also be made to flash.

PLC message LED

The panels have a PLC message LED. The LED will illuminate to indicate that the PLC has triggered a message that will be displayed in the LCD window. The LED will turn OFF when the *esc* pushbutton is pressed.

Character LCD display

The LCD screen on the EZ-220/420 models displays two different message types: local and PLC. In normal operation, the local messages are displayed on the screen. The messages have a menu tree structure with file folders that can be scrolled through using the control pushbuttons. A message with a "+" in the first character location indicates that it is a folder. When it is selected, (*enter*), the first character turns to a "-" and all associated messages can be viewed.

The PLC message mode allows the PLC to display non-user accessed messages. When the PLC triggers a message, the PLC Message light will illuminate and the current text message on the display will be overwritten by the PLC message. As soon as the message is acknowledged, the display will return back to the previous local message.

Up to 256 total messages may be configured and stored in the EZText Panels. The message can be three types: static, dynamic, or interactive.

Part Number	Description	Price
EZ-220	2x20 LCD display, 5 pushbuttons, 5 LEDs (all user defined), 4 control pushbuttons	\$180.00
EZ-220L	2x20 LCD display (large Characters), 5 pushbuttons, 5 LEDs (all user defined), 4 control pushbuttons	\$230.00
EZ-420	4x20 LCD display, 5 pushbuttons, 5 LEDs (all user defined), 4 control pushbuttons	\$200.00

Manual sold separately, EZ-TEXT-M, for \$15.00.



EZTOUCH CABLES AND WIRING

Power connector

A block style connector is used to connect an external 24VDC power supply. You can use our own FA-24PS 24VDC power supply as your source.

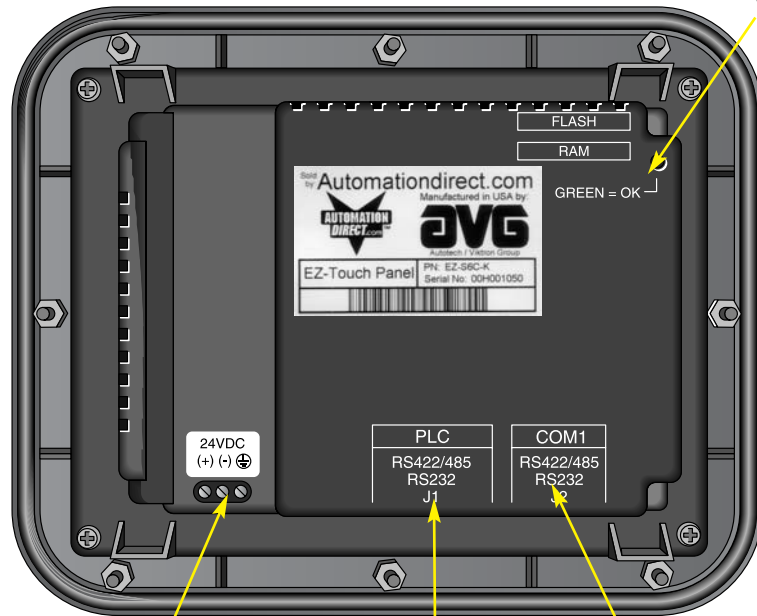
Power Connector		
Pin #	Connection	
+	+V	24VDC (20-30VDC)
-	-V	
		Chassis Ground

PLC port

The PLC port is a RS-232C, RS-422A or RS-485A female 15-pin D-sub connector. See the table below for the appropriate cable for your application.

COM 1 port

RS-232C, RS-422A, or RS-485A female 9-pin D-sub connector is used to connect to the programming computer or PLC.



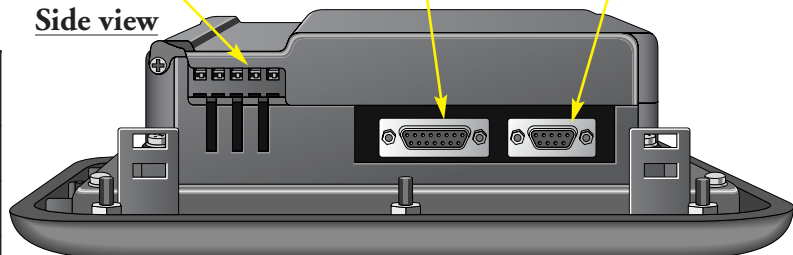
Status LED
Red=fault
Green=normal operation

Power connector

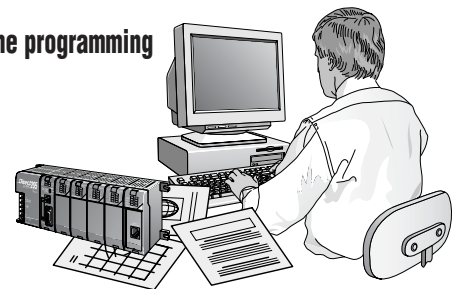
PLC port

COM1 port

Side view



Setup for online programming



Cable Part Number	Cable Description	Price
EZ-2CBL	DirectLOGIC PLC RJ-12	\$19.00
EZ-2CBL-1	DirectLOGIC VGA 15-pin (D2-250)	\$19.00
EZ-3CBL	DirectLOGIC PLC RJ-11	\$19.00
EZ-4CBL-1	DirectLOGIC DL405 PLC 15-pin D-sub port	\$19.00
EZ-4CBL-2	DirectLOGIC PLC 25-pin D-sub port	\$19.00
EZ-MLOGIX-CBL	Allen-Bradley MicroLogix	\$19.00
EZ-SLC-232-CBL	Allen-Bradley SLC 5-03/04/05DF1 port	\$19.00
EZPLC5-232-CBL	Allen-Bradley PLC-5 DF1 port	\$19.00
EZ-DH485-CBL	Allen-Bradley SLC 500 DH485	\$19.00
EZ-90-30-CBL	GE 90/30 and 90/70 15 pin D-sub	\$19.00
EZ-MITSU-CBL	MITSUBISHI FX24 25-pin	\$19.00
EZ-MITSU-CBL-1	MITSUBISHI FX24 8-pin mini-DIN	\$19.00
EZ-S7MPI-CBL	Siemens S7 MPI adapter 9-pin D-sub	\$19.00
EZTOUCH-PGM CBL	Programming cable	\$19.00

PLC Connector	
Pin Number	Connection
1	Chassis GND
2	PLC TXD (RS-232)
3	PLC RXD (RS-232)
4	+5V
5	Logic GND
6	LE
7	PLC CTS (RS-232)
8	PLC RTS (RS-232)
9	RXD+ (RS-422)
10	RXD- (RS-422)
11	TXD+ (RS-422)
12	TXD- (RS-422)
13	Terminating resistor
14	NC
15	NC

COM 1 Connector	
Pin Number	Connection
1	TXD- (RS-422)
2	TXD (RS-232)
3	RXD (RS-232)
4	RXD- (RS-422)
5	Logic GND
6	TXD+ (RS-422)
7	CTS (RS-232)
8	RTS (RS-232)
9	RXD+ (RS-422)

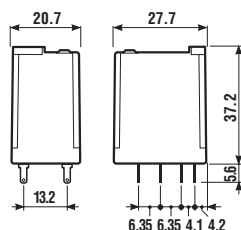
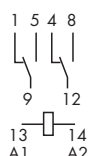
- Plug-in versions
- AC or DC coils
- Lockable test button and mechanical flag indicator as standard on 2 and 4 CO (DPDT and 4PDT) relays types
- Sockets and accessories: see 94, 99 and 86 series

55

55.32



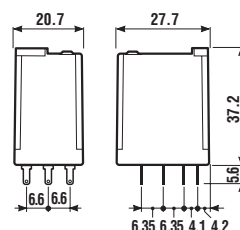
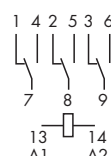
- 2 pole, 10 A
- Plug-in for use with 94 series sockets



55.33



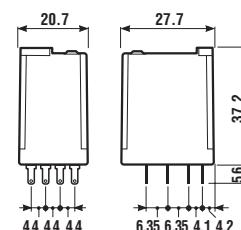
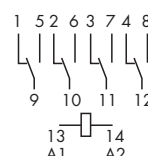
- 3 pole, 10 A
- Plug-in for use with 94 series sockets



55.34



- 4 pole, 7 A
- Plug-in for use with 94 series sockets



Contact specifications		55.32	55.33	55.34
Contact configuration		2 CO (DPDT)	3 CO (3PDT)	4 CO (4PDT)
Rated current/Maximum peak current	A	10/20	10/20	7/15
Rated voltage/Maximum switching voltage V AC		250/400	250/400	250/250
Rated load in AC1	VA	2,500	2,500	1,750
Rated load in AC15 (230 V AC)	VA	500	500	350
Single phase motor rating (230 V AC)	kW	0.37	0.37	0.125
Breaking capacity in DC1: 30/110/220 V A		10/0.25/0.12	10/0.25/0.12	7/0.25/0.12
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi	AgNi
Coil specifications		55.32	55.33	55.34
Nominal voltage (U _N)	V AC (50/60 Hz)	6 - 12 - 24 - 48 - 60 - 110 - 120 - 230 - 240		
	V DC	6 - 12 - 24 - 48 - 60 - 110 - 125 - 220		
Rated power AC/DC	VA (50 Hz)/W	1.5/1	1.5/1	1.5/1
Operating range	AC	(0.8...1.1)U _N	(0.8...1.1)U _N	(0.8...1.1)U _N
	DC	(0.8...1.1)U _N	(0.8...1.1)U _N	(0.8...1.1)U _N
Holding voltage	AC/DC	0.8 U _N /0.5 U _N	0.8 U _N /0.5 U _N	0.8 U _N /0.5 U _N
Must drop-out voltage	AC/DC	0.2 U _N /0.1 U _N	0.2 U _N /0.1 U _N	0.2 U _N /0.1 U _N
Technical data		55.32	55.33	55.34
Mechanical life AC/DC	cycles	20 · 10 ⁶ /50 · 10 ⁶	20 · 10 ⁶ /50 · 10 ⁶	20 · 10 ⁶ /50 · 10 ⁶
Electrical life at rated load AC1	cycles	200 · 10 ³	200 · 10 ³	150 · 10 ³
Operate/release time	ms	9/3	9/3	9/3
Insulation according to EN 61810-1 ed. 2		3.6 kV/2	3.6 kV/2	2.5 kV/2
Insulation between coil and contacts (1.2/50 μs)	kV	3.6	3.6	3.6
Dielectric strength between open contacts	V AC	1,000	1,000	1,000
Ambient temperature range	°C	-40...+85	-40...+85	-40...+85
Environmental protection		RT I	RT I	RT I
Approvals (according to type):				

ORDERING INFORMATION

Example: a 55 series plug-in relay, 4 CO (4PDT) contacts, coil rated 12 V DC with a lockable test button and mechanical indicator.

<p>Series _____</p> <p>Type _____</p> <p>1 = P.C.B. 3 = Plug-in</p> <p>No. of poles _____</p> <p>2 = 2 pole, 10 A 3 = 3 pole, 10 A 4 = 4 pole, 7 A</p> <p>Coil version _____</p> <p>8 = AC (50/60 Hz) 9 = DC</p> <p>Coil voltage _____</p> <p>see coil specifications</p>	<p>A: Contact material</p> <p>0 = Standard AgNi 2 = AgCdO 5 = AgNi + Au (5 µm)</p> <p>B: Contact circuit</p> <p>0 = CO (nPDT)</p>	<p>C: Options</p> <p>0 = None 1 = Lockable test button 2 = Mechanical indicator 3 = LED (AC) 4 = Lockable test button + mechanical indicator 5 = Lockable test button + LED (AC) 54 = Lockable test button + LED (AC) + mechanical indicator 6 = Double LED (DC not polarized) 7 = Lockable test button + double LED (DC not polarized) 74 = Lockable test button + double LED (DC not polarized) + mechanical indicator 8 = LED + diode (positive to pin A1/13, DC standard polarity) 9 = Lockable test button + LED + diode (positive to pin A1/13, DC standard polarity) 94 = Lockable test button + LED + diode (positive to pin A1/13, DC standard polarity) + mechanical indicator</p>
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Only combinations in the same row are possible

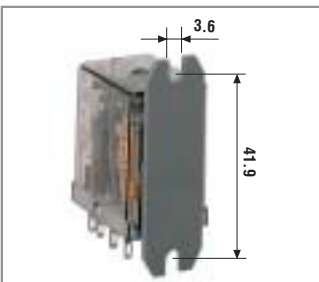
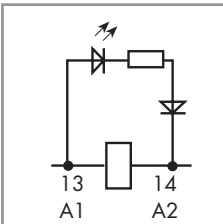
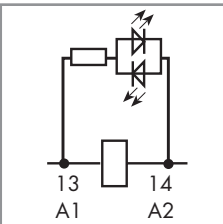
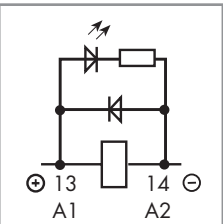
Preferred versions

	coil version	A	B	C	D
55.32/34	AC/DC	0	0	4	0
55.12/13/14	AC/DC	0	0	0	0
55.33	AC/DC	0	0	0	0

All versions

	coil version	A	B	C	D
55.32/34	AC/DC	0 - 2 - 5	0	0	0 - 6
	AC	0 - 2 - 5	0	2 - 3 - 4 - 5	0 - 6
	AC	0 - 2 - 5	0	54	/
	DC	0 - 2 - 5	0	2 - 4 - 6 - 7 - 8 - 9	0 - 6
	DC	0 - 2 - 5	0	74 - 94	/
55.33	AC/DC	0 - 2 - 5	0	0	0 - 6
	AC	0 - 2 - 5	0	1 - 3 - 5	0 - 6
	DC	0 - 2 - 5	0	1 - 6 - 7 - 8 - 9	0 - 6
55.12/13/14	AC/DC	0 - 2 - 5	0	0	0 - 1

POSSIBLE OPTIONS

AC	DC - Not polarized	DC - Standard polarity	
			
<p>Option = 0030 0050 0054</p>	<p>Option = 0060 0070 0074</p>	<p>Option = 0080 0090 0094</p>	<p>Option = 0006 REAR FLANGE MOUNT</p>



LOCKABLE TEST BUTTON AND MECHANICAL FLAG INDICATOR (0040)

The dual-purpose Finder test button can be used in two ways:

Case 1) The plastic pip (located directly above the test button) remains intact. In this case, when the test button is pushed, the contacts operate. When the test button is released the contacts return to their former state.

Case 2) The plastic pip is broken-off (using an appropriate cutting tool). In this case, (in addition to the above function), when the test button is pushed and rotated, the contacts are latched in the operating state, and remain so until the test button is rotated back to its former position.

In both cases ensure that the test button actuation is swift and decisive.

ACCESSORIES



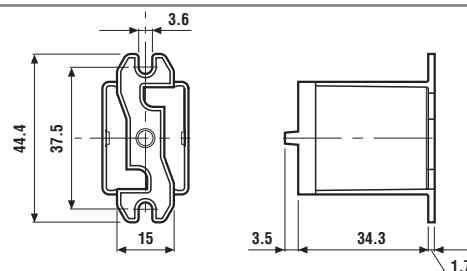
055.05



055.05 with relays

Adaptor with top mount flange for 55.32, 55.33, 55.34

055.05



55

TECHNICAL DATA

INSULATION

Insulation according to EN 61810-1 ed. 2	insulation rated voltage	V	400 (2-3 pole)	250 (4 pole)
	rated impulse withstand voltage	kV	3.6 (2-3 pole)	2.5 (4 pole)
	pollution degree		2	
	overvoltage category		III	
			2 CO (DPDT)	3 CO (3PDT)
Dielectric strength between adjacent contact		V AC	2,000	1,550

CONDUCTED DISTURBANCE IMMUNITY

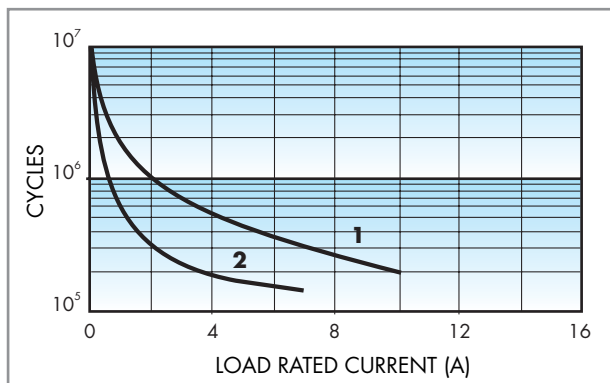
Burst (5...50)ns, 5 kHz, on A1 - A2	EN 61000-4-4	level 4 (4 kV)
Surge (1.2/50 µs) on A1 - A2 (differential mode)	EN 61000-4-5	level 4 (4 kV)

OTHER DATA

Bounce time: NO/NC	ms	1/4		
Vibration resistance (10...55)Hz, max. ± 1 mm: NO/NC	g/g	6/6		
Power lost to the environment		2 CO (DPDT)	3 CO (3PDT)	4 CO (4PDT)
	without contact current W	1	1	1
	with rated current W	3	4	3
Recommended distance between relays mounted on P.C.B.s	mm	≥ 5		

CONTACT SPECIFICATIONS

F 55

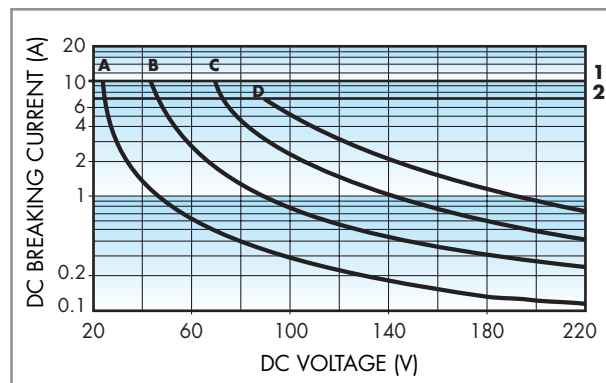


Electrical life vs AC1 load.

1 - 2 - 3 CO (DPDT - 3PDT) relay type (10 A)

2 - 4 CO (4PDT) relay type (7 A)

H 55



Breaking capacity for DC1 load.

1 - 2 - 3 CO (DPDT - 3PDT) type

2 - 4 CO (4PDT) type

A - Load applied to 1 contact

B - Load applied to 2 contacts in series

C - Load applied to 3 contacts in series

D - Load applied to 4 contacts in series

- When switching a resistive load (DC1) having voltage and current values under the curve the expected electrical life is $\geq 100 \cdot 10^3$ cycles.

- In case of DC13 loads the connection of a diode in parallel with the load will permit the same electrical life as for a DC1 load.

Note: the release time of load will be increase.

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COIL SPECIFICATIONS

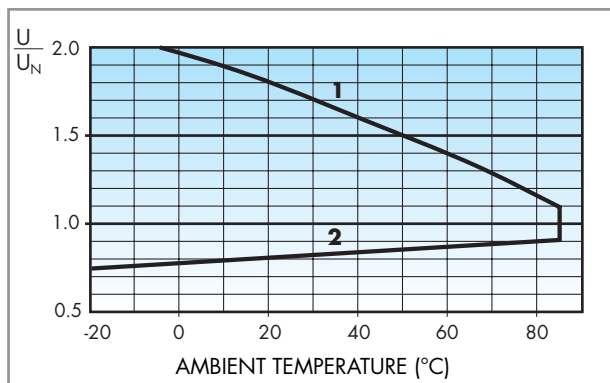
DC VERSION DATA

Nominal voltage U_N V	Coil code	Operating range		Resistance R Ω	Rated coil consumption I at U_N mA
		U_{min} V	U_{max} V		
6	9.006	4.8	6.6	40	150
12	9.012	9.6	13.2	140	86
24	9.024	19.2	26.4	600	40
48	9.048	38.4	52.8	2,400	20
60	9.060	48	66	4,000	15
110	9.110	88	121	12,500	8.8
125	9.125	100	137.5	17,300	7.2
220	9.220	176	242	54,000	4

AC VERSION DATA

Nominal voltage U_N V	Coil code	Operating range		Resistance R Ω	Rated coil consumption I at U_N (50Hz) mA
		U_{min} V	U_{max} V		
6	8.006	4.8	6.6	12	200
12	8.012	9.6	13.2	50	97
24	8.024	19.2	26.4	190	53
48	8.048	38.4	52.8	770	25
60	8.060	48	66	1,200	21
110	8.110	88	121	4,000	12.5
120	8.120	96	132	4,700	12
230	8.230	184	253	17,000	6
240	8.240	192	264	19,100	5.3

R 55 DC

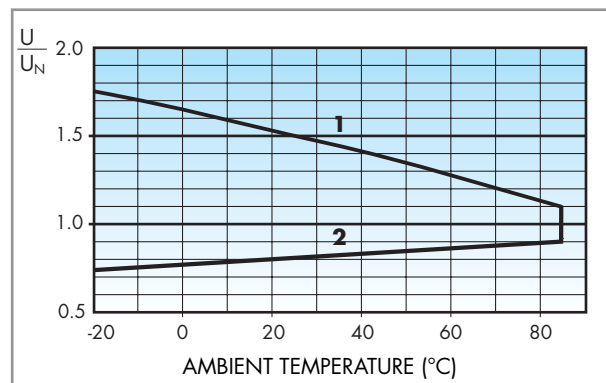


Operating range (DC type) vs ambient temperature.

1 - Max coil voltage permitted.

2 - Min pick-up voltage with coil at ambient temperature.

R 55 AC



Operating range (AC type) vs ambient temperature.

1 - Max coil voltage permitted.

2 - Min pick-up voltage with coil at ambient temperature.



94.04

Approvals
(according to type):



- Rated values: 10 A - 250 V
- Dielectric strength: ≥ 2 kV AC
- Protection category: IP 20
- Ambient temperature: $(-40...+70)^{\circ}\text{C}$
- Screw torque: 0.5 Nm
- Wire strip length: 8 mm
- Max wire size:

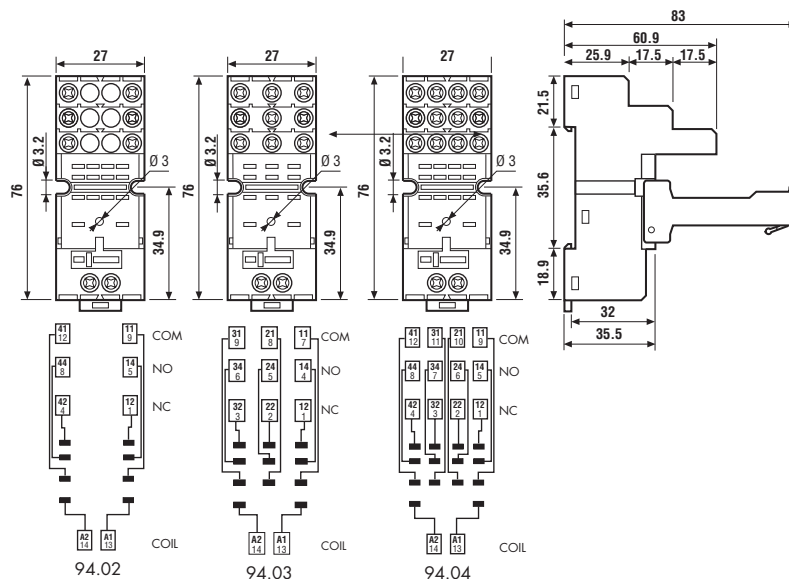
	solid wire	stranded wire
mm ²	1x6 / 2x2.5	1x4 / 2x2.5
AWG	1x10 / 2x14	1x12 / 2x14



94.01



94.02



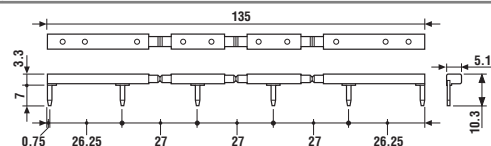
FOR 94.02, 94.03 AND 94.04 SOCKETS:



94.06

6-way jumper link	094.06
--------------------------	--------

- Rated values: 10 A - 250 V



86.10

86 series module timers (see technical data pages 151/155)	BLUE
Mono-function: (12...24)V AC/DC; function AI; (1.5s...60min)	86.10.0.024.0000
Mono-function: (12...24)V AC/DC; function DI; (1.5s...60min)	86.20.0.024.0000

Approvals
(according to type): GOST cULus



99.02

Approvals
(according to type):



99.02 coil indication and EMC suppression modules (see technical data page 209)		BLUE*
Diode** (+A1, standard polarity)	(6...220)V DC	99.02.3.000.00
Diode (+A2, non standard polarity)	(6...220)V DC	99.02.2.000.00
LED	(6...24)V DC/AC	99.02.0.024.59
LED	(28...60)V DC/AC	99.02.0.060.59
LED	(110...240)V DC/AC	99.02.0.230.59
LED + Diode** (+A1, standard polarity)	(6...24)V DC	99.02.9.024.99
LED + Diode** (+A1, standard polarity)	(28...60)V DC	99.02.9.060.99
LED + Diode** (+A1, standard polarity)	(110...220)V DC	99.02.9.220.99
LED + Diode (+A2, non standard polarity)	(6...24)V DC	99.02.9.024.79
LED + Diode (+A2, non standard polarity)	(28...60)V DC	99.02.9.060.79
LED + Diode (+A2, non standard polarity)	(110...220)V DC	99.02.9.220.79
LED + Varistor	(6...24)V DC/AC	99.02.0.024.98
LED + Varistor	(28...60)V DC/AC	99.02.0.060.98
LED + Varistor	(110...240)V DC/AC	99.02.0.230.98
RC circuit	(6...24)V DC/AC	99.02.0.024.09
RC circuit	(28...60)V DC/AC	99.02.0.060.09
RC circuit	(110...240)V DC/AC	99.02.0.230.09
Residual current by-pass (62 kΩ/1W)	(110...240)V AC	99.02.8.230.07

* Modules in Black housing are available on request.

**For DC supply, apply the positive to terminal A1.

IT'S EASY TO BUILD YOUR OWN PILOT LIGHT

Simply pick the code number from each of the sections below and combine them to build your part number. See page 2 for more detailed directions.

Pilot Lights

I II III IV - PLL V VI

Example: To build one of our most popular Pilot Lights, the part number would be I + II + III + IV + PLL + VI or FVLU120LG-PLLGN



I. BASIC PILOT LIGHT OPERATOR

CODE	DESCRIPTION	LIST
FVLU	Full Voltage	\$26.00
TFLU	Transformer (50/60 Hz)	\$38.00
RLU	Resistor	\$32.00
RTLU	Dual Input Remote Test	\$35.00

II. VOLTAGE BASED ON OPERATOR TYPE

CODE	DESCRIPTION
	FULL VOLTAGE
6	6V AC/DC
12	12V AC/DC
24	24V AC/DC
120	120V AC/DC
	TRANSFORMER
120	120V AC
240	240V AC
277	277V AC
480	480V AC
	RESISTOR
120	120V AC/DC
240	240V AC/DC
480	480V AC/DC
	DUAL INPUT REMOTE TEST
6	6V AC/DC
12	12V AC/DC
24	24V AC/DC
120	120V AC/DC
240	240V AC/DC

III. LAMP TYPE/COLOR

CODE	COLOR	LIST
	LED	
LA	Amber	\$10.00
LB	Blue	\$10.00
LG	Green	\$10.00
LR	Red	\$10.00
LW	White	\$10.00
	INCANDESCENT	
(Blank)	Clear	—
F	Clear Flashing Bulb	\$ 4.00
	NOTE: Incandescent flashing bulbs available for any 6V full voltage or transformer application.	
	NEON*	
NG	Green	—
NR	Red	—
	*NOTE: Only Available in FVLU120, RLU240 and RLU480.	
NL	No Lamp	— \$ 1.00

IV. CLAMP RING

CODE	DESCRIPTION	LIST
(Blank)	Polyester (Type 4X)	—
A	Aluminum (Type 4)	\$2.00

V. LENS TYPE

CODE	DESCRIPTION	LIST
PLL	Pilot Light Lens	\$6.00

VI. LENS COLOR

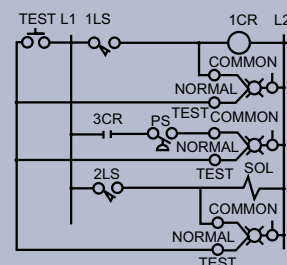
CODE	COLOR
AR	Amber
BE	Blue
CR	Clear
GN	Green
RD	Red
WE	White

SEE PAGE 31 FOR LAMP TECHNICAL DATA AND LAMP REPLACEMENT CHARTS.

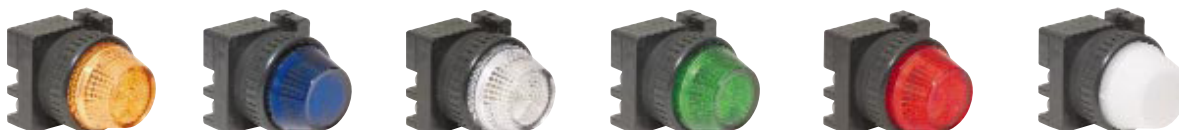
DISCOUNT SCHEDULE **A**

DUAL INPUT REMOTE TEST

Our unique Dual Input Remote light unit can be used as a pilot light while also permitting the testing of a number of lights from a single push button. A diode circuit isolates the test supply from the normal supply. The schematic shown represents a typical dual input application.



AVAILABLE LENS COLORS FOR PILOT LIGHTS

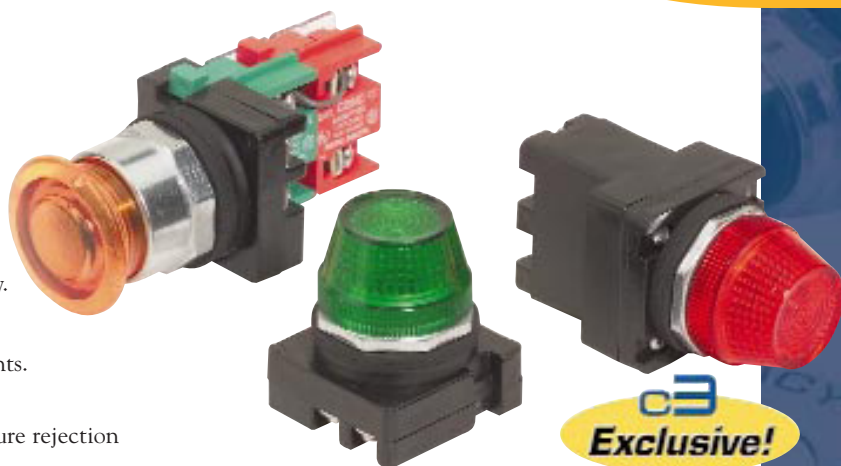


30MM PILOT LIGHTS

Our 30mm Pilot Lights and Illuminated Push-To-Test Pilot Lights, when utilized with our LED lamps provide long-lasting life and high quality with tremendous resistance to shock and vibration. Our reflection technology and state-of-the-art LED lamps improve visibility from all angles. c3controls LED lamps last 100,000 hours — *that's 11.4 years!* Combine these LEDs with our full voltage, transformer or resistor packages for optimum durability. All c3controls 30mm operators are UL Listed and are rated Type 4/4X standard for watertight and corrosion resistance. In addition, operators are also listed for Types 1, 2, 3, 3R, 12 and 13 requirements.

Product features include:

- Polyester construction for superior corrosion resistance, moisture rejection and electrical insulation.
- Full voltage lights incorporate a unique insulated socket design to minimize accidental contact during lamp change.
- All lights use miniature bayonet base lamps to provide reliable lamp secureness.
- #6 terminal screws with self-lifting captive wire clamps accommodate #22 through two #12 AWG wires per terminal.
- Operators conveniently mount in a round 30mm or 1-13/64" hole that is directly interchangeable with competitors units and eliminates the labor required for notching.



Multi-Voltage Light!
See page 23

UNIQUE PRODUCT FEATURES



1. Compact, thin design is also vibration resistant.
2. Our seal is infused with a coating to eliminate cracking when exposed to harsh conditions such as heat, dryness and sunlight. This seal also acts as a light reflector because it is white which increases light output and improves visibility from all angles.
3. Our rugged lenses provide better visibility and can resist high impact for reliable performance in most environments, even in high temperature ambients.
4. We utilize a premium 130V incandescent lamp for improved, long-lasting life.

SOME OF OUR POPULAR CONFIGURATIONS:

PILOT LIGHTS WITH POLYESTER CLAMP RING (TYPE 4X)

CATALOG NUMBER	DESCRIPTION	LIST
FVLU120LG-PLLGN	Full Voltage 120V Green LED w/Green Lens	\$42.00
FVLU120LR-PLLRD	Full Voltage 120V Red LED w/Red Lens	\$42.00
FVLU120LA-PLLAR	Full Voltage 120V Amber LED w/Amber Lens	\$42.00

IT'S EASY TO BUILD YOUR OWN PUSH BUTTON

Simply pick the code number from each of the sections below and combine them to build your part number. See page 2 for more detailed directions.

Momentary Push Buttons (Non-Illuminated)

PBO - I II III IV V

Example: To build one of our most popular Push Buttons, the part number would be **PBO + II + III + IV + V** or **PBO-FCGN-NO**



I. OPERATOR TYPE

CODE	DESCRIPTION	LIST
PBO	Push Button Operator	\$8.40

II. CLAMP RING

CODE	DESCRIPTION	LIST
(Blank)	Polyester (Type 4X)	—
A	Aluminum (Type 4)	\$2.00

III. CAP TYPE

CODE	DESCRIPTION	LIST
(Blank)	Operator less Cap	—
FC	Flush Cap	\$ 2.40
XC	Extended Cap	\$ 2.40
MC	Mushroom Cap	\$ 8.00
JMC	Jumbo Mushroom Cap	\$10.00
SMC	*Shrouded Mushroom Cap	\$12.00
SJC	*Shrouded Jumbo Mushroom Cap	\$14.00

*NOTE: Aluminum clamp rings are NOT an option for SMC or SJC.

IV. CAP COLOR

CODE	COLOR
(Blank)	Operator less Cap
BK	Black
BE	Blue
GN	Green
GY	Grey
RD	Red
WE	White
YW	Yellow

V. CONTACT BLOCK CONFIGURATION

CODE	DESCRIPTION	LIST
(Blank)	Operator without Contact Blocks	—
NO	1 Normally Open Contact Block	\$ 6.00
NC	1 Normally Closed Contact Block	\$ 6.00
EM	1 "Early Make" Contact Block	\$ 8.00
DB	1 "Delayed Break" Contact Block	\$ 8.00
NO/NO	2 Normally Open Contact Blocks	\$12.00
NC/NC	2 Normally Closed Contact Blocks	\$12.00
NO/NC	1 Normally Open and 1 Normally Closed Contact Blocks	\$12.00

LEGEND PLATES in almost any size & color are available for same day shipping. See pages 28-29 for a complete selection.



DISCOUNT
SCHEDULE **A**

RUBBER BOOTS ALSO AVAILABLE



Your Secondary Defense for Added Protection.

Chemicals on gloves, wash down areas and particularly harsh climates will do damage to any push button. Utilizing our state-of-the-art rubber boots protect both the operators and the circuits behind them.

Our Standard Rubber Boots feature a brass ring that is molded with Neoprene that has been modified to provide added pliability and protection against dust, freezing and thawing environments.

Our Fluorosilicone Rubber Boots feature a nickel-plated brass threaded ring that is insert molded into a special thermoset compound to withstand most applications in corrosive environments and perform well against more chemicals and vapors than Hypalon Boots.

RUBBER BOOTS

STANDARD RUBBER BOOTS			FLUOROSILICONE RUBBER BOOTS		
CODE	COLOR	LIST	CODE	COLOR	LIST
RBBK	Black	\$15.00	HRBBK	Black	\$18.00
RBGH	Green	\$15.00	HRBGH	Green	\$18.00
RBRD	Red	\$15.00	HRBRD	Red	\$18.00
RBYW	Yellow	\$15.00	HRBYW	Yellow	\$18.00

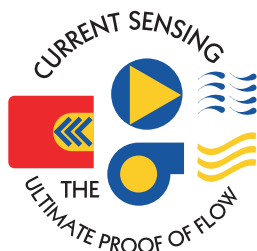


Example: To build one of our most popular Push Buttons with a Rubber Boot, replace **II, III & IV (Clamp Ring, Cap Type & Color)** with the code from the rubber boot chart above. The part number would be **PBO + [code from rubber boot chart above] + V** or **PBO-RBGH-NO**.

NOTE: Rubber boots come standard with a built-in clamp ring.

Hawkeye® 721LC/721HC/921

**Solid- & Split-Core
4-20mA Output
Loop Powered**



Maximize Reliability,
Minimize Installed Cost

The Hawkeye 721LC, 722HC, & 921 provide accurate load trending information with a proportional 4-20mA output signal. Preset slide switches provide easy field setup of sensed amperage range without clumsy jumpers.

APPLICATIONS

- Load trending
- Motor control

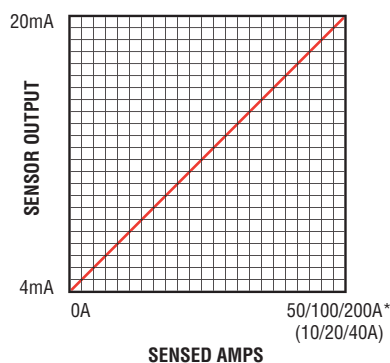
Loop powered analog current sensor simplifies installation

- Power the sensor and receive the signal with only two wires...fewer wires required than with traditional 3-wire sensors
- Self-gripping split-core for fast retrofit installation...no need to remove conductor (921)
- Economical solid-core features adjustable bracket for easy alignment

Selectable factory calibrated ranges up to 200A for increased flexibility and resolution

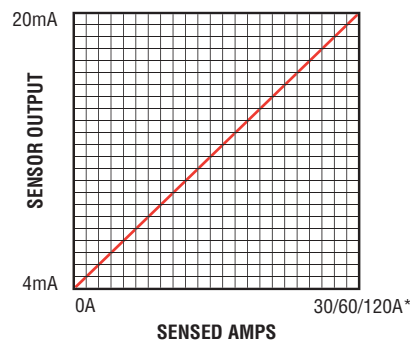
- Factory calibrated switch selectable ranges for high resolution and installation ease
- Three field-selectable ranges per unit...fewer versions to choose from, stock, and install
- Mounting bracket for installation flexibility
- 5 year limited warranty
- Made in USA

H721HC (LC) LINEAR OUTPUT Scale software as shown



*Factory calibrated ranges selected with the amperage range switch

H921 LINEAR OUTPUT Scale software as shown



*Factory calibrated ranges selected with the amperage range switch

EASY 2-WIRE INSTALLATION!



H721LC

Slide
Switch
Scaling



H921

ORDERING INFORMATION

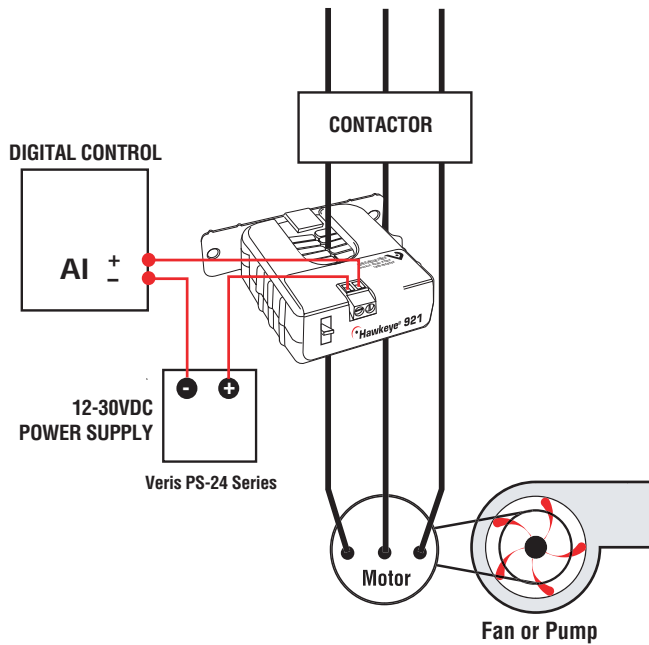
MODEL	AMPERAGE RANGE	OUTPUT TYPE
H721LC Solid-Core	0-10/20/40A	4-20mA, loop powered
H721HC Solid-Core	0-50/100/200A	4-20mA, loop powered
H921 Split-Core	0-30/60/120A	4-20mA, loop powered



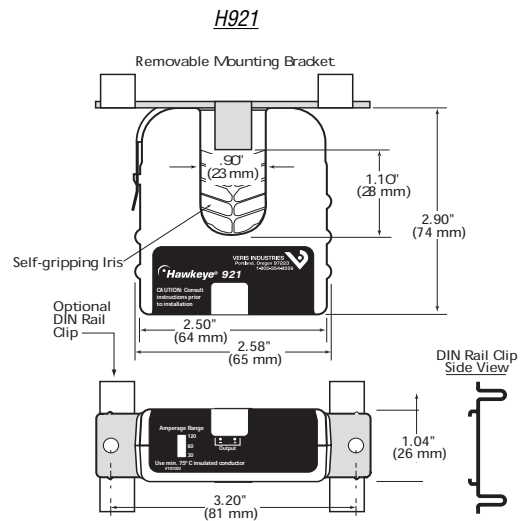
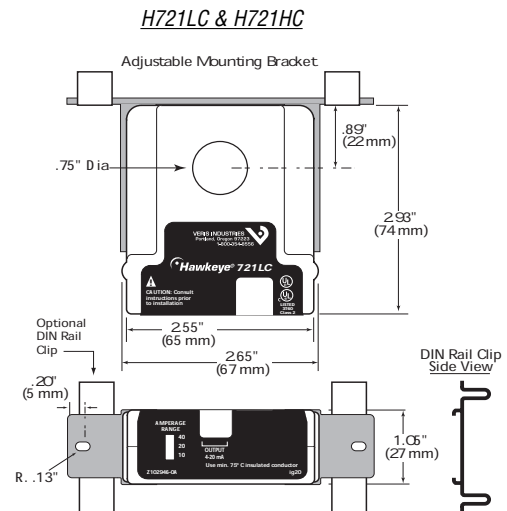
ACCESSORIES

MODEL	DESCRIPTION
PS-24 Series	Universal Power Supply

APPLICATIONS/WIRING EXAMPLE



DIMENSIONAL DRAWINGS

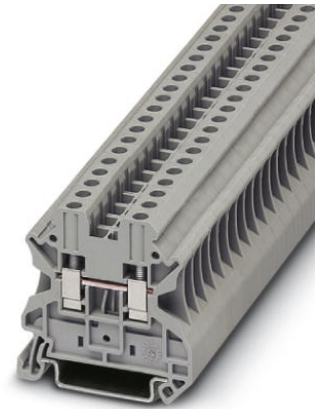


SPECIFICATIONS

Amperage Range	See ordering table
Output	4-20mADC
Insulation Class	600VAC rms
Frequency	60Hz. nominal
Temperature Range	-15° to 60°C
Humidity Range	0 - 95% non-condensing
Accuracy	±2% of reading from 10% to 100% of full scale
Response Time	2 sec.
Supply Voltage	12-30VDC Loop powered
Supply Current	30mA (max.)
Dimensions (H721LC & H721HC)...(LxWxH)	2.93" x 2.65" x 1.05"
Sensor Hole Size	0.75" Diameter
Dimensions (H921)...(LxWxH)	2.90" x 2.58" x 1.04"
Sensor Opening Size (H921)...(LxW)	1.10" x 90"

UT 4

Order No.: 3044102



<http://eshop.phoenixcontact.de/phoenix/treeViewClick.do?UID=3044102>

Universal terminal block with screw connection, cross section: 0,14 - 4 mm², AWG: 26 - 10, width: 6.2 mm, color: Gray



Commercial data

EAN	4017918960391
Pack	50 Pcs.
Customs tariff	85369010
Weight/Piece	0.009424 KG
Catalog page information	Page 27 (CL-2007)

Product notes

WEEE/RoHS-compliant since:
01/01/2003



<http://www.download.phoenixcontact.com>
Please note that the data given here has been taken from the online catalog. For comprehensive information and data, please refer to the user documentation. The General Terms and Conditions of Use apply to Internet downloads.

Technical data

General

Number of levels	1
Number of connections	2
Color	gray

Insulating material	PA
Inflammability class acc. to UL 94	V0

Dimensions

Width	6.2 mm
Length	47.7 mm
Height NS 35/7,5	47.5 mm
Height NS 35/15	55 mm

Technical data

Maximum load current	41 A (with 6 mm ² conductor cross section)
Rated surge voltage	8 kV
Pollution degree	3
Surge voltage category	III
Insulating material group	I
Connection in acc. with standard	IEC 60947-7-1
Nominal current I _N	32 A (with 4 mm ² conductor cross section)
Nominal voltage U _N	1000 V
Open side panel	ja

Connection data

Conductor cross section solid min.	0.14 mm ²
Conductor cross section solid max.	6 mm ²
Conductor cross section stranded min.	0.14 mm ²
Conductor cross section stranded max.	6 mm ²
Conductor cross section AWG/kcmil min.	26
Conductor cross section AWG/kcmil max	10
Conductor cross section stranded, with ferrule without plastic sleeve min.	0.25 mm ²
Conductor cross section stranded, with ferrule without plastic sleeve max.	4 mm ²
Conductor cross section stranded, with ferrule with plastic sleeve min.	0.25 mm ²
Conductor cross section stranded, with ferrule with plastic sleeve max.	4 mm ²
2 conductors with same cross section, solid min.	0.14 mm ²
2 conductors with same cross section, solid max.	1.5 mm ²

2 conductors with same cross section, stranded min.	0.14 mm ²
2 conductors with same cross section, stranded max.	1.5 mm ²
2 conductors with same cross section, stranded, TWIN ferrules with plastic sleeve, min.	0.5 mm ²
2 conductors with same cross section, stranded, TWIN ferrules with plastic sleeve, max.	2.5 mm ²
2 conductors with same cross section, stranded, ferrules without plastic sleeve, min.	0.25 mm ²
2 conductors with same cross section, stranded, ferrules without plastic sleeve, max.	1.5 mm ²
Type of connection	Screw connection
Stripping length	9 mm
Internal cylindrical gage	A4
Screw thread	M 3
Tightening torque, min	0.6 Nm
Tightening torque max	0.8 Nm

Certificates / Approvals



CSA

Nominal voltage U _N	600 V
Nominal current I _N	30 A
AWG/kcmil	26-10

CUL

Nominal voltage U _N	600 V
Nominal current I _N	30 A
AWG/kcmil	26-10

UL

Nominal voltage U _N	600 V
Nominal current I _N	30 A
AWG/kcmil	26-10
Certification	CB, CSA, CUL, DNV, GL, LR, UL, VDE-PZI

requested approbations

Certification Ex:	IECEX, KEMA-EX
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Accessories

Item	Designation	Description
Assembly		
3047167	ATP-UT	Partition plate, for visual and electrical separation of terminal groups, width: 2 mm, color: gray
3047028	D-UT 2,5/10	Cover, for terminal block UT and UT...-PE, width 2.2 mm, color: Gray
0801762	NS 35/ 7,5 CU UNPERF 2000MM	DIN rail, material: Copper, unperforated, height 7.5 mm, width 35 mm, length: 2 m
1207640	NS 35/ 7,5 PERF 755MM	NS 35 DIN rail, height 7.5 mm, length 755 mm
1207653	NS 35/ 7,5 PERF 955MM	NS35 DIN rail, height 7.5 mm, length 955 mm
1207666	NS 35/ 7,5 PERF 1155MM	NS 35 DIN rail, height 7.5 mm, length 1155 mm
0801733	NS 35/ 7,5 PERF 2000MM	DIN rail, material: Steel, perforated, height 7.5 mm, width 35 mm, length: 2 m
0801681	NS 35/ 7,5 UNPERF 2000MM	DIN rail, material: Steel, unperforated, height 7.5 mm, width 35 mm, length: 2 m
1201756	NS 35/15 AL UNPERF 2000MM	DIN rail, deep-drawn, high profile, unperforated, 1.5 mm thick, material: Aluminum, height 15 mm, width 35 mm, length 2 m
1201895	NS 35/15 CU UNPERF 2000MM	DIN rail, material: Copper, unperforated, 1.5 mm thick, height 15 mm, width 35 mm, length: 2 m
1207679	NS 35/15 PERF 755MM	NS 35 DIN rail, perforated, height 15 mm, length 755 mm
1207682	NS 35/15 PERF 955MM	NS 35 DIN rail, perforated, height 15 mm, length 955 mm
1207695	NS 35/15 PERF 1155MM	NS 35 DIN rail, perforated, height 15 mm, length 1155 mm
1201730	NS 35/15 PERF 2000MM	DIN rail, material: Steel, perforated, height 15 mm, width 35 mm, length: 2 m
1201714	NS 35/15 UNPERF 2000MM	DIN rail, material: Steel, unperforated, height 15 mm, width 35 mm, length: 2 m
1201798	NS 35/15-2,3 UNPERF 2000MM	DIN rail, material: Steel, unperforated, 2.3 mm thick, height 15 mm, width 35 mm, length: 2 m

Bridges

3030336	FBS 2-6	Plug-in bridge for cross-connections in the terminal center, 2-pos., color: Red
3030242	FBS 3-6	Plug-in bridge for cross-connections in the terminal center, 3-pos., color: Red
3030255	FBS 4-6	Plug-in bridge for cross-connections in the terminal center, 4-pos., color: Red

3030349	FBS 5-6	Plug-in bridge for cross-connections in the terminal center, 5-pos., color: Red
3030271	FBS 10-6	Plug-in bridge for cross-connections in the terminal center, 10-pos., color: Red
3030365	FBS 20-6	Plug-in bridge for cross-connections in the terminal center, 20-pos., color: Red
3032224	FBS 50-6	Plug-in bridge for cross-connections in the terminal center, 50-pos., color: Red

General

3022276	CLIPFIX 35-5	Snap-on end bracket, for NS 35/7.5 or NS 35/15 DIN rail, can be fitted with Zack strip ZB 5 and ZBF 5, terminal strip marker KLM 2 and KLM, parking facility for FBS...5, FBS...6, KSS 5, KSS 6, width: 5,15 mm, color: gray
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Marking

0811228	X-PEN 0,35	Marker pen without ink cartridge, for manual labeling of markers, labeling extremely wipe-proof, line thickness 0.35 mm
1051016	ZB 6,LGS:FORTL.ZAHLEN	Zack strip, 10-section, printed horizontally: with the numbers, 1-10, 11-20 etc. up to 991-1000, color: white
5060935	ZB 6/WH-100:UNBEDRUCKT	Zack strip, unprinted: For individual labeling with M-PEN, ZB-T or CMS system, large batch, sufficient for labeling 1000 terminal blocks, for a terminal width of 6.2 mm, color: White
1050499	ZB 6:SO/CMS	Zack strip, 10-section, divisible, special printing, marking according to customer requirements

Plug/Adapter

0201689	MPS-IH BU	Insulating sleeve (blue), for MPS metal part to be ordered separately (0201744)
0201676	MPS-IH RD	Insulating sleeve (red), for MPS metal part to be ordered separately (0201744)
0201663	MPS-IH WH	Insulating sleeve (white), for MPS metal part to be ordered separately (0201744)
0201744	MPS-MT	Test plug, consisting of: Metal part for 2.3 mm diameter socket hole
3030925	PAI-4	Test adapter, for 4 mm diameter test plug PS and safety test plug, makes contact in the bridge shaft
3030996	PS-6	Modular test plug, for individual assembly of test plug strips, for UT, ST, DT and QT terminal blocks, can be labeled with ZBF 6, color: Red

Tools

1205053	SZS 0,6X3,5	Screwdriver, bladed, matches all screw terminal blocks up to 4.0 mm ² connection cross section, blade: 0.6 x 3.5 mm, without VDE approval
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Address

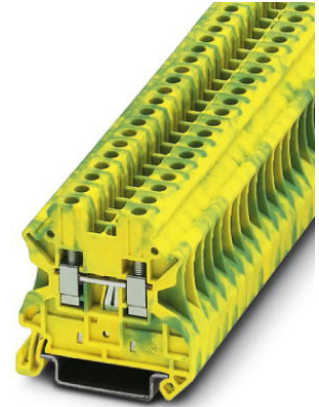
PHOENIX CONTACT Inc., USA
586 Fulling Mill Road
Middletown, PA 17057, USA
Phone (800) 888-7388
Fax (717) 944-1625
<http://www.phoenixcon.com>



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UT 4-PE

Order No.: 3044128



<http://eshop.phoenixcontact.de/phoenix/treeViewClick.do?UID=3044128>

Universal terminal block with screw connection, cross section: 0.14 - 4 mm², AWG: 26 - 10, width: 6.2 mm, color: Green-yellow



Commercial data

EAN	4017918960407
Pack	50 Pcs.
Customs tariff	85369010
Weight/Piece	0.01325 KG
Catalog page information	Page 33 (CL-2007)

Product notes

WEEE/RoHS-compliant since:
01/01/2003



<http://www.download.phoenixcontact.com>
Please note that the data given here has been taken from the online catalog. For comprehensive information and data, please refer to the user documentation. The General Terms and Conditions of Use apply to Internet downloads.

Technical data

General

Number of levels	1
Number of connections	2
Color	green-yellow

Insulating material	PA
Inflammability class acc. to UL 94	V0

Dimensions

Width	6.2 mm
Length	47.7 mm
Height NS 35/7,5	47.5 mm
Height NS 35/15	55 mm

Technical data

Rated surge voltage	8 kV
Pollution degree	3
Surge voltage category	III
Insulating material group	I
Connection in acc. with standard	IEC 60947-7-2
Open side panel	ja

Connection data

Conductor cross section solid min.	0.14 mm ²
Conductor cross section solid max.	6 mm ²
Conductor cross section stranded min.	0.14 mm ²
Conductor cross section stranded max.	6 mm ²
Conductor cross section AWG/kcmil min.	26
Conductor cross section AWG/kcmil max	10
Conductor cross section stranded, with ferrule without plastic sleeve min.	0.25 mm ²
Conductor cross section stranded, with ferrule without plastic sleeve max.	4 mm ²
Conductor cross section stranded, with ferrule with plastic sleeve min.	0.25 mm ²
Conductor cross section stranded, with ferrule with plastic sleeve max.	4 mm ²
2 conductors with same cross section, solid min.	0.14 mm ²
2 conductors with same cross section, solid max.	1.5 mm ²
2 conductors with same cross section, stranded min.	0.14 mm ²
2 conductors with same cross section, stranded max.	1.5 mm ²

2 conductors with same cross section, stranded, TWIN ferrules with plastic sleeve, min.	0.5 mm ²
2 conductors with same cross section, stranded, TWIN ferrules with plastic sleeve, max.	2.5 mm ²
2 conductors with same cross section, stranded, ferrules without plastic sleeve, min.	0.25 mm ²
2 conductors with same cross section, stranded, ferrules without plastic sleeve, max.	1.5 mm ²
Type of connection	Screw connection
Stripping length	9 mm
Internal cylindrical gage	A4
Screw thread	M 3
Tightening torque, min	0.6 Nm
Tightening torque max	0.8 Nm

Certificates / Approvals



CSA

AWG/kcmil	26-10
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CUL

AWG/kcmil	26-10
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UL

AWG/kcmil	26-10
Certification	CB, CSA, CUL, DNV, GL, LR, UL, VDE-PZI

requested approbations

Certification Ex:	IECEX, KEMA-EX
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Accessories

Item	Designation	Description
Assembly		
3047167	ATP-UT	Partition plate, for visual and electrical separation of terminal groups, width: 2 mm, color: gray

3047028	D-UT 2,5/10	Cover, for terminal block UT and UT...-PE, width 2.2 mm, color: Gray
0801762	NS 35/ 7,5 CU UNPERF 2000MM	DIN rail, material: Copper, unperforated, height 7.5 mm, width 35 mm, length: 2 m
1207640	NS 35/ 7,5 PERF 755MM	NS 35 DIN rail, height 7.5 mm, length 755 mm
1207653	NS 35/ 7,5 PERF 955MM	NS35 DIN rail, height 7.5 mm, length 955 mm
1207666	NS 35/ 7,5 PERF 1155MM	NS 35 DIN rail, height 7.5 mm, length 1155 mm
0801733	NS 35/ 7,5 PERF 2000MM	DIN rail, material: Steel, perforated, height 7.5 mm, width 35 mm, length: 2 m
0801681	NS 35/ 7,5 UNPERF 2000MM	DIN rail, material: Steel, unperforated, height 7.5 mm, width 35 mm, length: 2 m
1201756	NS 35/15 AL UNPERF 2000MM	DIN rail, deep-drawn, high profile, unperforated, 1.5 mm thick, material: Aluminum, height 15 mm, width 35 mm, length 2 m
1201895	NS 35/15 CU UNPERF 2000MM	DIN rail, material: Copper, unperforated, 1.5 mm thick, height 15 mm, width 35 mm, length: 2 m
1207679	NS 35/15 PERF 755MM	NS 35 DIN rail, perforated, height 15 mm, length 755 mm
1207682	NS 35/15 PERF 955MM	NS 35 DIN rail, perforated, height 15 mm, length 955 mm
1207695	NS 35/15 PERF 1155MM	NS 35 DIN rail, perforated, height 15 mm, length 1155 mm
1201730	NS 35/15 PERF 2000MM	DIN rail, material: Steel, perforated, height 15 mm, width 35 mm, length: 2 m
1201714	NS 35/15 UNPERF 2000MM	DIN rail, material: Steel, unperforated, height 15 mm, width 35 mm, length: 2 m
1201798	NS 35/15-2,3 UNPERF 2000MM	DIN rail, material: Steel, unperforated, 2.3 mm thick, height 15 mm, width 35 mm, length: 2 m

Bridges

3030336	FBS 2-6	Plug-in bridge for cross-connections in the terminal center, 2-pos., color: Red
3030242	FBS 3-6	Plug-in bridge for cross-connections in the terminal center, 3-pos., color: Red
3030255	FBS 4-6	Plug-in bridge for cross-connections in the terminal center, 4-pos., color: Red
3030349	FBS 5-6	Plug-in bridge for cross-connections in the terminal center, 5-pos., color: Red
3030271	FBS 10-6	Plug-in bridge for cross-connections in the terminal center, 10-pos., color: Red
3030365	FBS 20-6	Plug-in bridge for cross-connections in the terminal center, 20-pos., color: Red
3032224	FBS 50-6	Plug-in bridge for cross-connections in the terminal center, 50-pos., color: Red

General

3022276	CLIPFIX 35-5	Snap-on end bracket, for NS 35/7.5 or NS 35/15 DIN rail, can be fitted with Zack strip ZB 5 and ZBF 5, terminal strip marker KLM 2 and KLM, parking facility for FBS...5, FBS...6, KSS 5, KSS 6, width: 5,15 mm, color: gray
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Marking

0811228	X-PEN 0,35	Marker pen without ink cartridge, for manual labeling of markers, labeling extremely wipe-proof, line thickness 0.35 mm
1051016	ZB 6,LGS:FORTL.ZAHLEN	Zack strip, 10-section, printed horizontally: with the numbers, 1-10, 11-20 etc. up to 991-1000, color: white
5060935	ZB 6/WH-100:UNBEDRUCKT	Zack strip, unprinted: For individual labeling with M-PEN, ZB-T or CMS system, large batch, sufficient for labeling 1000 terminal blocks, for a terminal width of 6.2 mm, color: White
1050499	ZB 6:SO/CMS	Zack strip, 10-section, divisible, special printing, marking according to customer requirements

Plug/Adapter

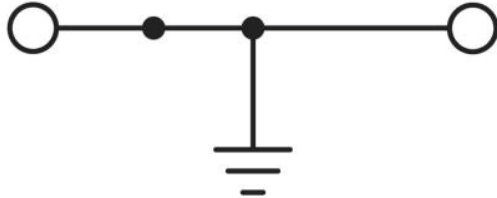
0201689	MPS-IH BU	Insulating sleeve (blue), for MPS metal part to be ordered separately (0201744)
0201676	MPS-IH RD	Insulating sleeve (red), for MPS metal part to be ordered separately (0201744)
0201663	MPS-IH WH	Insulating sleeve (white), for MPS metal part to be ordered separately (0201744)
0201744	MPS-MT	Test plug, consisting of: Metal part for 2.3 mm diameter socket hole
3030925	PAI-4	Test adapter, for 4 mm diameter test plug PS and safety test plug, makes contact in the bridge shaft
3030996	PS-6	Modular test plug, for individual assembly of test plug strips, for UT, ST, DT and QT terminal blocks, can be labeled with ZBF 6, color: Red

Tools

1205053	SZS 0,6X3,5	Screwdriver, bladed, matches all screw terminal blocks up to 4.0 mm ² connection cross section, blade: 0.6 x 3.5 mm, without VDE approval
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Drawings

Circuit diagram



Address

PHOENIX CONTACT Inc., USA
586 Fulling Mill Road
Middletown, PA 17057, USA
Phone (800) 888-7388
Fax (717) 944-1625
<http://www.phoenixcon.com>



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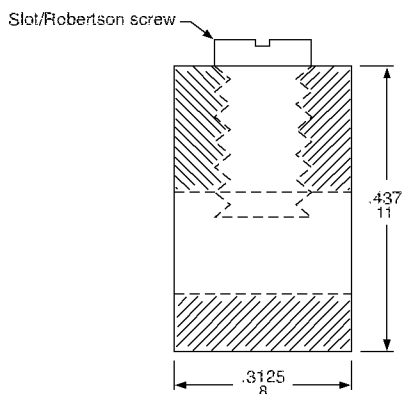
HOMELINE Circuit Breaker Load Centers—Class 1170

Technical Information

TECHNICAL INFORMATION

Grounding Bar Kits

All PK equipment grounding kits are supplied with mounting screws, necessary installation instructions, and an “Equipment Grounding Terminal” self-adhesive label.



Cross Section of Size 1 Ground Bar

Catalog Number	Total Qty.	Terminals						Approximate Overall Length		Distance Between Mounting Holes		Mounting
		Quantity Each Size See "Wire Range Table" below.										
		I	II	III	IV	V	VI	in.	mm	in.	mm	
PK0GTA2 ◆	2						2	1.75	44	One hole	One hole	Top
PK0GTA6 ■	6					6		4.61	117	1.69	43	Top
PK3GTA1 +	3	3						1.38	35	One hole	One hole	Top
PK4GTA +	4	4						1.63	41	One hole	One hole	Top
PK5GTA ▼	5	5						2.25	57	1.25	32	Top
PK7GTA +	7	7						2.88	73	1.25	32	Top or side
PK9GTA1 +	9	9						3.25	83	One hole	One hole	Top
PK9GTA +	9	9						3.78	96	3.13	80	Top
PK12GTA +	12	12						4.70	119	3.13	80	Top
PK15GTA +	15	15						5.63	143	3.13	80	Top
PK15GTAL ★	16	15	1					8.13	207	3.13	80	Top
PK15GTA6 ◆	21	15			6			5.88	149	▲	▲	Top
PK18GTA +	18	18						6.56	167	3.13	80	Top
PK18GTAL ★	19	18	1					8.81	224	3.13	80	Top
PK23GTA +	23	23						8.11	206	3.13	80	Top
PK23GTAL ★	24	23	1					9.44	240	3.13	80	Top
PK27GTA ● +	27 or 26	27 26		1				9.36	238	3.13	80	Top

- PK27GTA includes one main grounding lug that mounts with two terminal screws and requires three terminals for mounting.
- ▲ 3.13 in. (80 mm) on small terminals; 5.25 in. (133 mm) on large terminals.
- ◆ Mounting screw 40205-065-01 (one required).
- +
- ★ Mounting screw 21594-14302 (two required).
- Mounting screw 21922-18360 (two required).
- ▼ Mounting screw 21594-14241 (two required).
- ◆ Mounting screws 21594-14241(two required) and 21594-17121(two required).

Wire Range Table

Size	Cu (AWG)	Al (AWG)
I	(1) #14–#4 or (2) #14 or #12	(1) #12–#4 or (2) #12 or #10
II	(1) #1–4/0	(1) #1–4/0
III	(1) #6–2/0	(1) #6–2/0
IV	(1) #6–3/0	(1) #6–3/0
V	(1) #14–1/0	(1) #14–1/0
VI	(1) #10–2/0	(1) #6–2/0





T1

DUCT SERIES

Material

Rigid PVC,
self-extinguishing

Color

Light GREY RAL 7030
WHITE

Standard Length

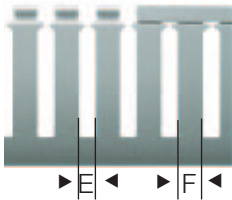
6 Feet 6 3/4 Inches

Standard Unit Supplied

Duct complete
with cover

THE MOST COMPREHENSIVE RANGE

NOMINAL 1 1/2"-2 1/4"-3"-4"



NOMINAL 5/8"-1"



All wiring ducts come complete with cover. Wiring duct covers can be sold separately: see page 8 and IBOCO Corp. Price List.

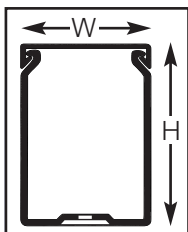
Catalog Number	Nominal Size (WxH)	Dimensions in inches (Actual)					Dimensions WxH (in millimeters)	Standard Carton (Qty)	
		W	H	E	F			Lengths (1)	Feet
T1-0506G	1/2 x 5/8	.60	.71	.20	.30	15 x 18	20	120	
T1-0510G	1/2 x 1	.60	1.18	.20	.30	15 x 30	20	120	
T1-1010*	1 x 1	1.00	1.18	.20	.30	25 x 30	18	108	
T1-1015*	1 x 1 1/2	1.00	1.57	.31	.47	25 x 40	18	108	
T1-1022*	1 x 2 1/4	1.00	2.36	.31	.47	25 x 60	24	144	
T1-1030*	1 x 3	1.00	3.15	.31	.47	25 x 80	24	144	
T1-1040*	1 x 4	1.00	3.94	.31	.47	25 x 100	8	48	
T1-1515*	1 1/2 x 1 1/2	1.57	1.57	.31	.47	40 x 40	20	120	
T1-1522*	1 1/2 x 2 1/4	1.57	2.36	.31	.47	40 x 60	18	108	
T1-1530*	1 1/2 x 3	1.57	3.15	.31	.47	40 x 80	16	96	
T1-1540*	1 1/2 x 4	1.57	3.94	.31	.47	40 x 100	8	48	
T1-2215G	2 1/2 x 1 1/4	2.36	1.57	.31	.47	60 x 40	12	72	
T1-2222*	2 1/2 x 2 1/2	2.36	2.36	.31	.47	60 x 60	12	72	
T1-2230*	2 1/2 x 3	2.36	3.15	.31	.47	60 x 80	12	72	
T1-2240*	2 1/2 x 4	2.36	3.94	.31	.47	60 x 100	4	24	
T1-3015G	3 x 1 1/2	3.15	1.57	.31	.47	80 x 40	12	72	
T1-3022*	3 x 2 1/4	3.15	2.36	.31	.47	80 x 60	12	72	
T1-3030*	3 x 3	3.15	3.15	.31	.47	80 x 80	12	72	
T1-3040*	3 x 4	3.15	3.94	.31	.47	80 x 100	4	24	
T1-3050*	3 x 5	2.95	4.92	.31	.47	75 x 125	6	36	
T1-4015*	4 x 1 1/2	3.94	1.57	.31	.47	100 x 40	8	48	
T1-4022G	4 x 2 1/4	3.94	2.36	.31	.47	100 x 60	8	48	
T1-4030*	4 x 3	3.94	3.15	.31	.47	100 x 80	8	48	
T1-4040*	4 x 4	3.94	3.94	.31	.47	100 x 100	4	24	
T1-4050*	4 x 5	3.94	4.92	.31	.47	100 x 125	4	24	
T1-6040*	6 x 4	5.91	3.94	.31	.47	150 x 100	4	24	

Example: T1-0510 G = 1/2"x 1"light GREY duct with cover

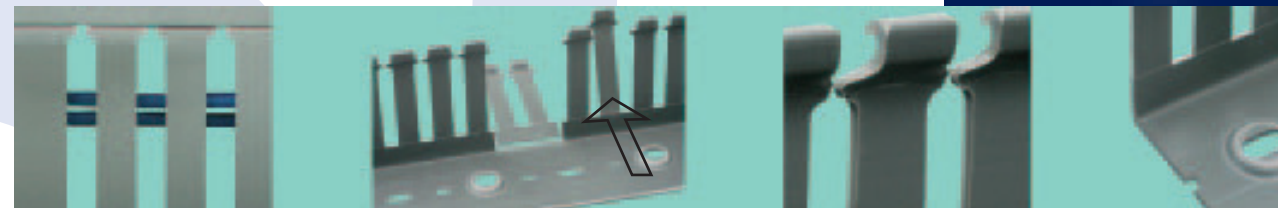
(1) Each standard length is actually 6'6 3/4"
but is counted as 6 feet for packaging and pricing

* Color - add suffix "G" for light GREY "W" for WHITE

ADHESIVE BACKING - add suffix "A" to catalog number - contact sales office for pricing (see page 22)



Non-slip cover design of minimum encumbrance and maximum grip.

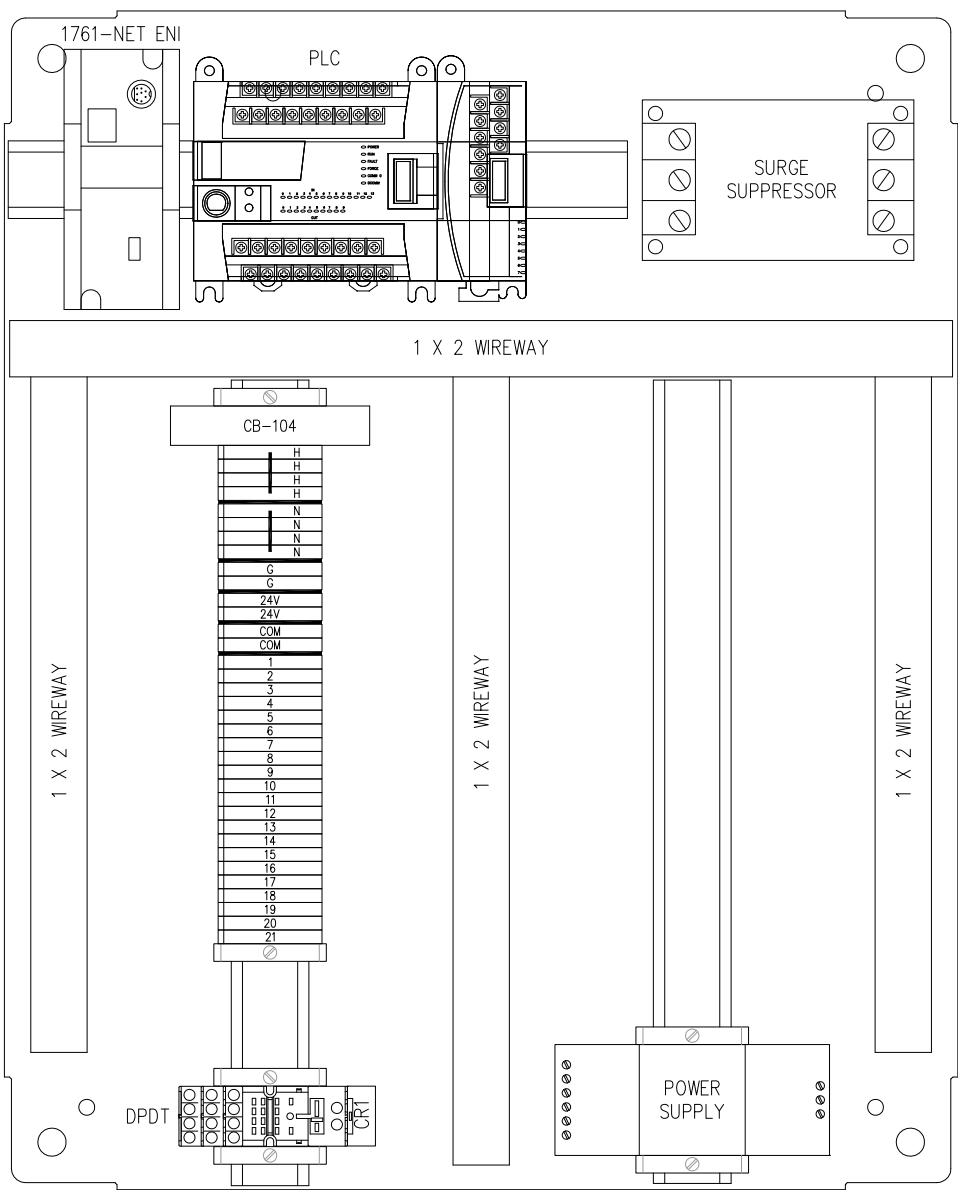
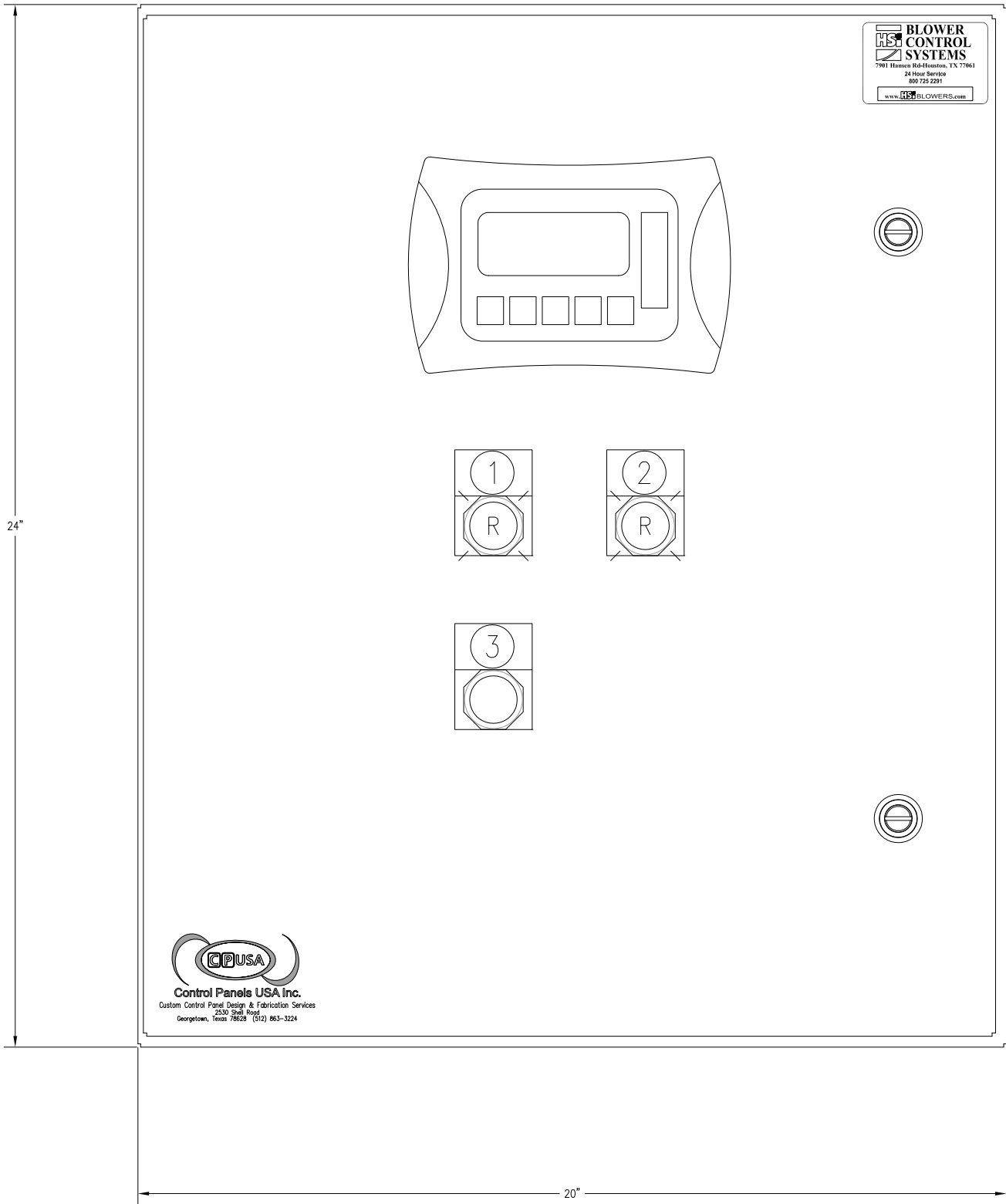


Restricted slot opening for wire retaining.

Two predetermined breaklines:
- for breaking off and removal of sidewall finger segments only.
- for removal of sidewall finger and base segments.

Burr-free edges for avoiding damage to the panel electrician's hands.

Patent recess boss for rapid mounting of components.



INTERIOR LAYOUT

DOOR TAG LAYOUT	
TAG #	TAG DESCRIPTION: LINE 1 / LINE 2 / LINE 3 / LINE 4
1	SURGE / / SHUTDOWN
2	OVERLOAD / / SHUTDOWN
3	SHUTDOWN / / RESET

REV	DATE	APP	DESCRIPTION
A	10/07/08		FOR REVIEW

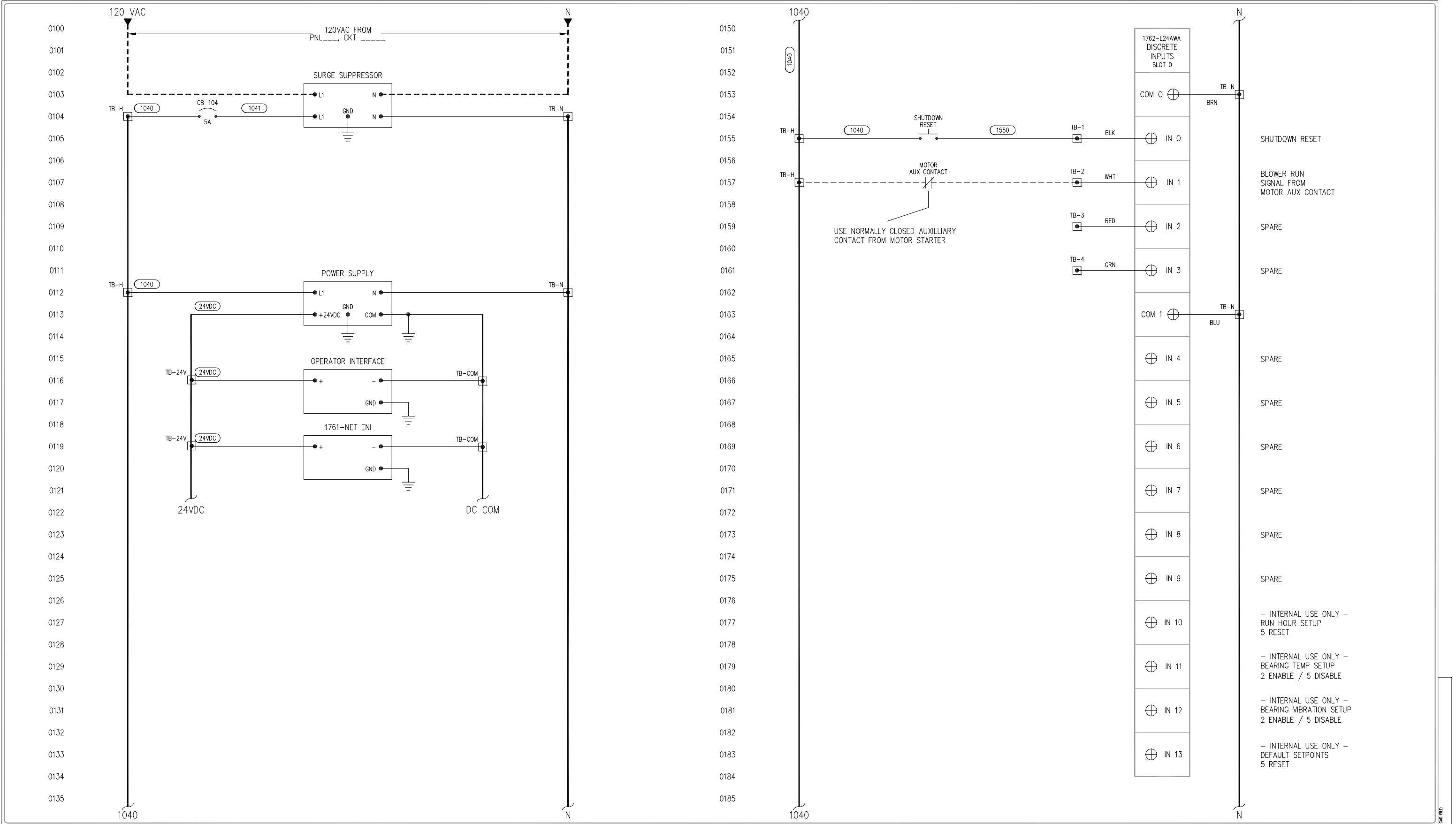
CPUSA
Control Panels USA Inc.
Custom Control Panel Design & Fabrication Services
2530 Shell Road
Georgetown, Texas 78628 (512) 863-3224

DESIGNER J. KORNELE	
DRAWN BY: JLM	DATE: 10/03/08
CHECKED BY:	
DRAWING STATUS: FOR REVIEW	

CLIENT:

**HOUSTON
SERVICE
INDUSTRIES**

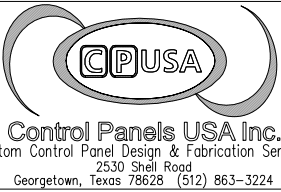
SURGE/OVERLOAD PANEL HSI1102-0-0-1			
PANEL LAYOUT			
JOB NO. 08-3751	DWG. NO. CP-1.0	REV. A	
SCALE N.T.S.	SHEET		



SCHEMATIC LEGEND

- INTERNAL PANEL WIRING
- FIELD WIRING
- TERMINAL LOCATED IN LOCAL PANEL
- WIRE LABEL

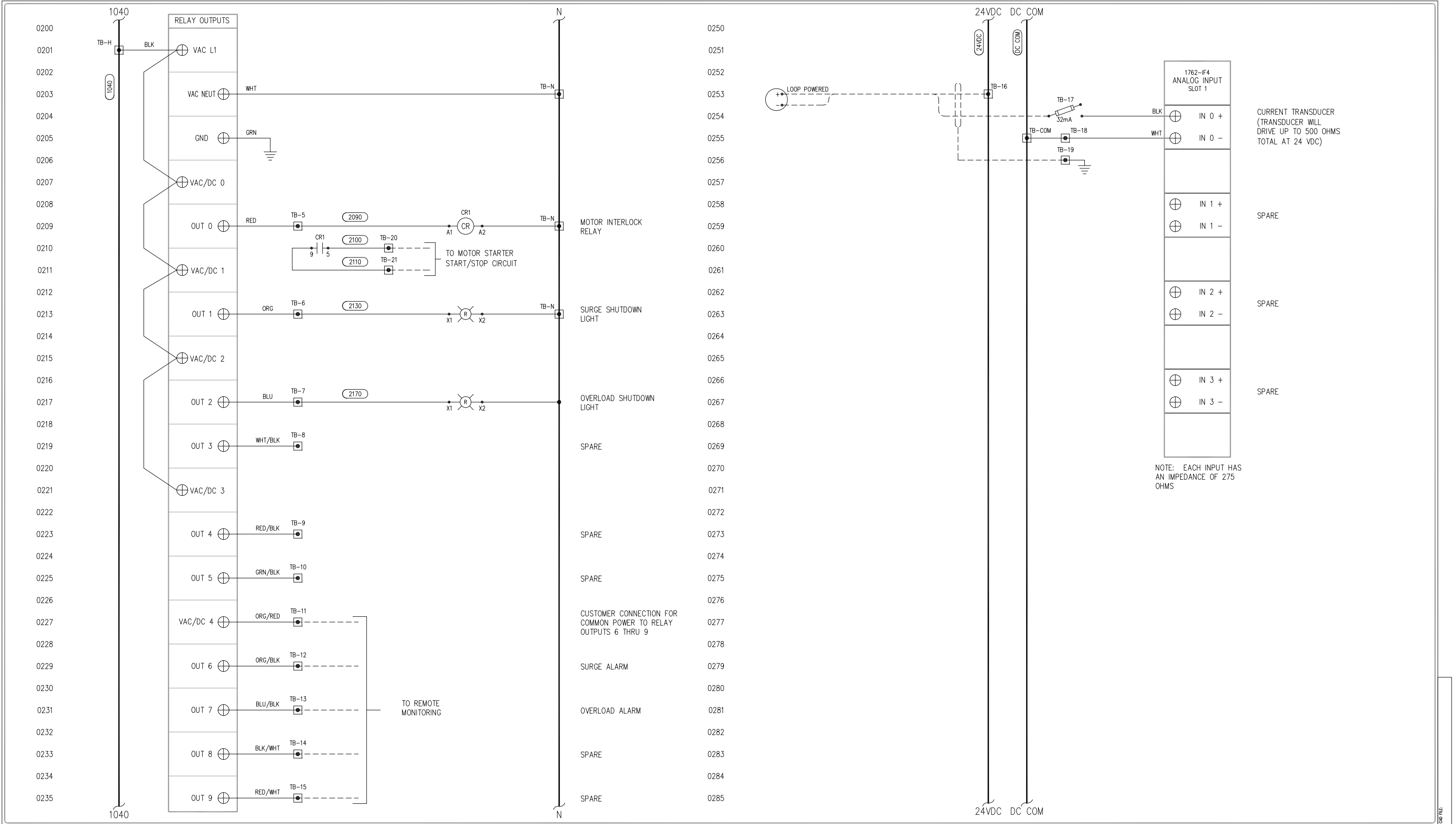
REV	DATE	APP	DESCRIPTION
B	10/10/08		ADDED 1761-NET ENI CARD
A	10/07/08		FOR REVIEW



DESIGNER	
J. KORNELE	
DRAWN BY:	DATE:
JLM	10/03/08
CHECKED BY:	
DRAWING STATUS:	
FOR REVIEW	

CLIENT:	HOUSTON SERVICE INDUSTRIES
---------	----------------------------

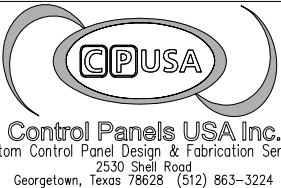
SURGE/OVERLOAD PANEL HS1102-0-0-1			
ELECTRICAL SCHEMATIC			
JOB NO. 08-3751	DWG. NO. E-1.1		
SCALE N.T.S.	SHEET	REV. B	



SCHEMATIC LEGEND

- INTERNAL PANEL WIRING
- FIELD WIRING
- TERMINAL LOCATED IN LOCAL PANEL
- WIRE LABEL

REV	DATE	APP	DESCRIPTION
B	10/10/08		ADDED 1761-NET ENI CARD
A	10/07/08		FOR REVIEW



DESIGNER	J. KORNELE
DRAWN BY:	JLM
CHECKED BY:	
DRAWING STATUS:	FOR REVIEW
DATE:	10/03/08

CLIENT: **HOUSTON SERVICE INDUSTRIES**

SURGE/OVERLOAD PANEL HSI1102-0-0-1			
ELECTRICAL SCHEMATIC			
JOB NO.	08-3751	DWG. NO.	E-1.2
SCALE	N.T.S.	SHEET	REV. B